TECHNOLOGY DEPT:

September 3, 1941

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NATIONAL PETROLEUM NEWS

Alloy Steels for Refinery Use

Characteristics of various steel alloys are described, in relation to high temperature and pressure requirements of refinery usage, by a metallurgist .....Page R-275

Method for Duplicating Road Octanes in Laboratory

A test procedure developed in the automotive laboratory of a large oil company, which gives octane number results correlating with those obtained in road tests .....Page R-283

Diesel Electric vs. Steam Locomotive Performance

Many data showing the advantages and disadvantages of the modern Diesel-electric driven locomotives from the standpoint of costs and service, as given by a railroad operating engineer.....Page R-286

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A.A.R. head tells Senate oil shortage investigating committee there are plenty of tank cars to haul oil to East Coast. Page 5.

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PCO seeks rail rate cuts to relieve East Coast transportation shortage. Page 9.

* * *

U. S. Army contemplates use of all-purpose lubes in diesel-engined tanks. Page 14.

September gasoline supplies to private motorists cut to 85% of July's deliveries. Page 10.

* * *

June domestic motor fuel demand shows only 5% increase; aviation gasoline demand increases 40%. Page 5.

* * *

Two new recycling plants planned for East Texas area. Page 13.

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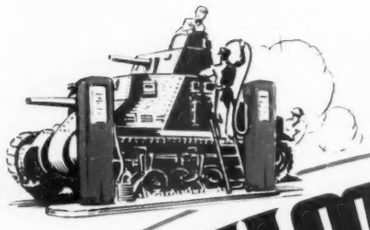
SPAB's position in oil priorities set-up explained. Page 9.

REFINING TECHNOLOGY EDITION



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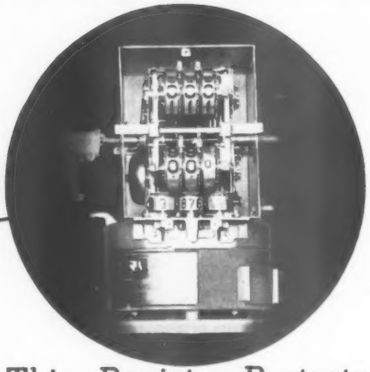

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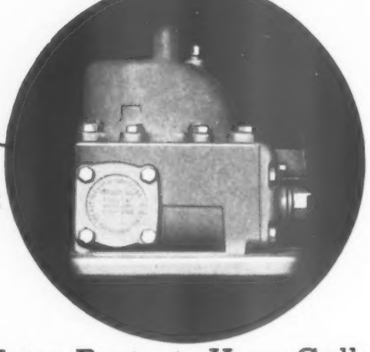

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COMING MEETINGS

SEPTEMBER

American Chemical Society, Chalfonte-Haddon Hall, Atlantic City, N. J., Mon.-Fri., Sept. 8-12.
Oil Trades Assn. of New York, Sports Day, Pelham Country Club, Pelham Manor, N. Y., Tues., Sept. 9.
National Petroleum Assn., Hotel Traymore, Atlantic City, N. J., Wed.-Fri., Sept. 17-19.
Society of Automotive Engineers, National Tractor Meeting, Schroeder Hotel, Milwaukee, Wis., Thurs.-Fri., Sept. 25-26.
New Jersey Oil Trade Assn., Fall Golf Outing and Dinner, Braidburn Country Club, Madison, N. J., Thursday, Sept. 25.
Michigan Petroleum Assn., Fall Convention, Park Place Hotel, Traverse City, Mich., Thurs.-Fri., Sept. 25-26.
National Lubricating Grease Institute, 9th Annual Meeting, Stevens Hotel, Chicago, Ill., Mon.-Tues., Sept. 29-30.

OCTOBER

West Virginia Oil & Natural Gas Assn., Annual Convention, Clarksburg, W. Va., Wed.-Thurs., Oct. 2-3.
Western Petroleum Refiners Assn., Regional Technical Meeting, Allis Hotel, Wichita, Kans., Fri., Oct. 3.
Thirteenth Boston Conference on Distribution, Hotel Statler, Boston, Mass., Mon.-Tues., Oct. 6-7.
Twenty-Eighth National Foreign Trade Convention, Hotel Pennsylvania, New York, Mon.-Wed., Oct. 6-8.
National Safety Congress, Stevens Hotel, Chicago, Ill., Mon.-Thurs., Oct. 6-9.
Texas Mid-Continent Oil & Gas Assn., Beaumont, Tex., Tues.-Thurs., Oct. 9-11.
National Dixie Distributors, Inc., Hotel Morrison, Chicago, Ill., Mon.-Tues., Oct. 13-14.
National Oil Marketers Assn., Hotel Morrison, Chicago, Ill., Mon.-Tues., Oct. 13-14.
Indiana Independent Petroleum Assn., Fall Convention, Hotel Severin, Indianapolis, Ind., Tues.-Wed., Oct. 14-15.
American Assn. of Petroleum Geologists, Pacific Section, Los Angeles, Calif., Thurs.-Fri., Oct. 16-17.
Western Petroleum Refiners Assn., Regional Technical Meeting, Washington-Youree Hotel, Shreveport, La., Fri., Oct. 17.
American Institute of Mining & Metallurgical Engineers, Petroleum Division, Dallas, Tex., Thurs.-Sat., Oct. 16-18; Ambassador Hotel, Los Angeles, Calif., Wed.-Thurs., Oct. 29-30.
National Stripper Well Assn., Annual Meeting, Mayo Hotel, Tulsa, Okla., Mon., Oct. 20.
Independent Petroleum Assn. of America, 12th annual meeting, Tulsa, Okla., Mon.-Wed., Oct. 20-22.
Society of Automotive Engineers, National Fuels & Lubricants Meeting, Mayo Hotel, Tulsa, Okla., Thurs.-Fri., Oct. 23-24.
Tennessee Oil Men's Assn., Fall Convention, Andrew Johnson Hotel, Knoxville, Tenn., Thurs.-Fri., Oct. 23-24.
Oil Trades Association of New York, Annual Banquet, Waldorf-Astoria Hotel, New York, Tues., Oct. 28.
Society of Automotive Engineers, National Aircraft Production Meeting, Biltmore Hotel, Los Angeles, Calif., Thurs.-Sat., Oct. 30-Nov. 1.
California Natural Gasoline Assn., Los Angeles, Calif., Fri., Oct. 31.

NOVEMBER

American Institute of Chemical Engineers, 34th annual meeting, Cavalier Hotel, Virginia Beach, Va., Mon.-Wed., Nov. 3-5.
Society of Automotive Engineers, West Coast Transportation & Maintenance Meeting, San Francisco, Calif., Wed.-Thurs., Nov. 5-6.
American Petroleum Institute, 22nd Annual Meeting, St. Francis and Palace Hotels, San Francisco, Calif., Mon.-Fri., Nov. 3-7.
Society of Automotive Engineers, National Transportation & Maintenance Meeting, Statler Hotel, Cleveland, Ohio, Thurs.-Fri., Nov. 13-14.

DECEMBER

New Mexico Oil & Gas Assn., Artesia, New Mex., Wed., Dec. 3.
Oklahoma Stripper Well Assn., Tulsa, Okla., Fri. Dec. 5.

JANUARY, 1942

Society of Automotive Engineers, Annual Meeting (and Engineering Display) Book Cadillac Hotel, Detroit, Mich., Mon.-Fri., Jan. 12-16.

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Published every Wednesday by The National Petroleum Publishing Co.

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V. B. GUTHRIE, *Managing Editor*

Member of Audit Bureau of Circulations and Associated Business Papers Inc.

Publication office: 1213 W. Third St., Cleveland, Ohio, U.S.A. Telephone, CHerry 7672. Cable Address PLATTOIL, Cleveland. Cable inquiries are answered by mail unless subscriber advances sufficient funds in American money to cover our cable costs.

NEWS BUREAUS

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THIS WEEK WITH NPN

SYSTEM

A survey of NPN's women subscribers to see what *they* think about girls working in service stations (see story page 19) disclosed an "alias" and a neat solution to a problem which has nothing to do with the question of the fair sex vs. the gasoline pump. The oil jobber who was discovered with the "alias" when he answered the questionnaire NPN thought had been sent to women readers only, said he had taken two NPN subscriptions since he likes to keep one file of copies at home. But the postman kept mixing his home and his office mail and the NPNs on his library table were getting fewer and farther between. The problem was solved, however, when he had his wife's name placed on one subscription.

LOW DOWN

"It has been suggested by Boston oil men that your publication would aid us in obtaining background on the oil and gasoline shortage," states a letter NPN received this week from the editor of the *Boston Traveler*. His letter concludes by asking for copies of both NPN and Platt's OILGRAM, carrying the latest news of the East Coast's supply situation.

NPN'S MAILBAG

One of NPN's subscribers in Switzerland is bewailing the freezing of credits as he is unable to clear funds to pay for his renewal. Another NPN reader, now in the U. S. Navy, finds that being on a ship interferes with deliveries of his copies. His letter asks that his NPN subscription be transferred to a friend for the "duration".

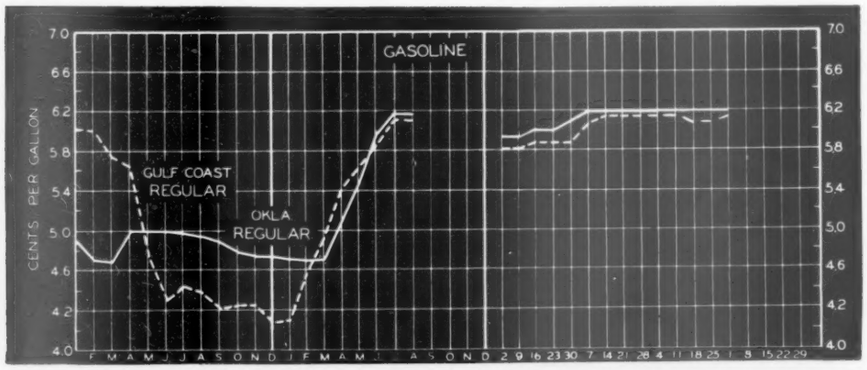
PLUS PROFITS

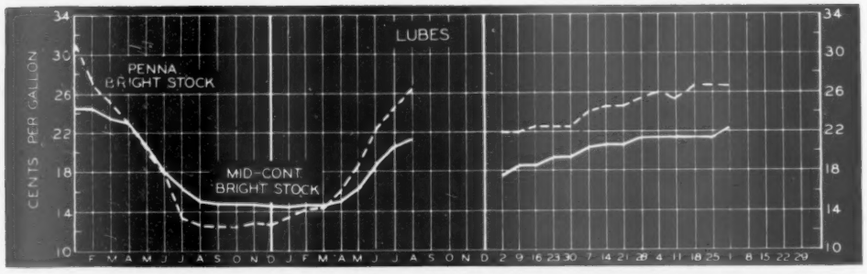
How marketers can build "plus profits" is featured in the messages of six companies in this issue. Four others feature equipment that builds station sales and efficiency, while six other companies feature equipment and services for bulk plants.

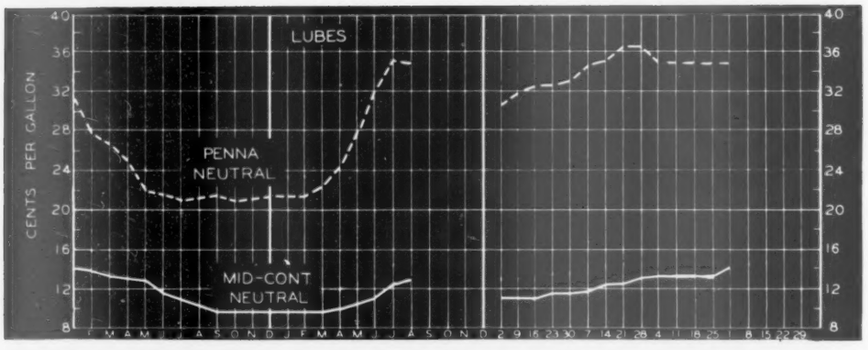
STATISTICS

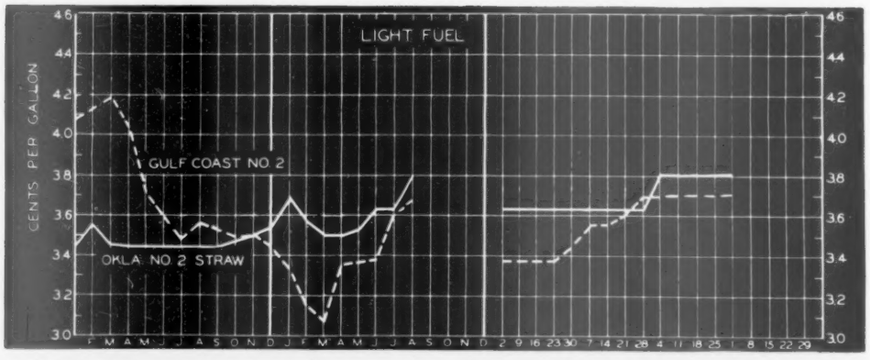
Refinery Prices

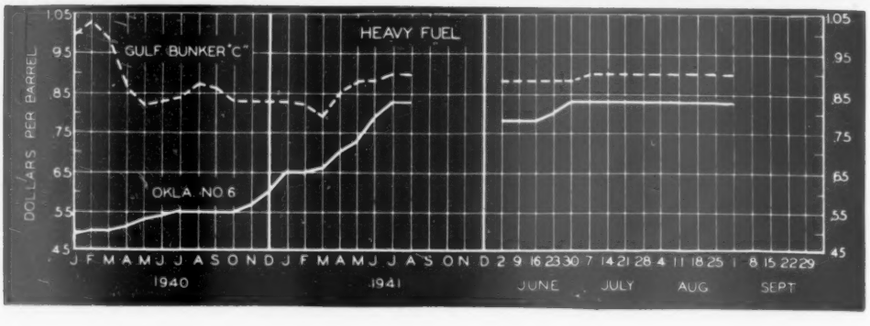
Monthly prices in graphs are averages of daily high and low prices shown in Platt's Oilgram. Weekly prices are averages of high and low prices shown in Monday Oilgram, and in NPN.











NPN Gasoline Index

	Dealer T.W.	Tank Car
	Cents per Gallon	
Sept. 2	9.96	6.73
Month ago	9.96	6.71
Year ago	8.84	5.22

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of following wholesale markets for regular-grade gasoline, FOB refineries or terminals: Okla., Mid-Western, W. Penna., Calif., N. Y. Harbor, Philadelphia, Jacksonville, Boston, Gulf Coast.

NPN Refinery Index

The Refinery Index shown below represents the return in cents per barrel (42 gallons) from refining a barrel of 36 gravity Mid-Continent crude into its various principal products. The index is calculated by subtracting the current price of crude at the well from the average price of refined products sold at current quoted Oklahoma refinery prices.

Date	Margin
Sept. 2	71.9
Month ago	71.9
Year ago	50.3

Pennsylvania Crude Runs

(Compiled by National Petroleum Assn. from reports of all companies that refined Pennsylvania crude. Figures in barrels.)

Week Ended	Daily Average	Week Ended	Daily Average
Jan. 4	60,635	May 10	72,608
Jan. 11	71,543	May 17	73,322
Jan. 18	75,854	May 24	77,003
Jan. 25	74,429	May 31	78,235
Feb. 1	74,363	June 7	67,639
Feb. 8	75,735	June 14	79,514
Feb. 15	73,712	June 21	75,020
Feb. 22	71,890	June 28	74,440
Mar. 1	68,969	July 5	71,340
Mar. 8	65,810	July 12	80,616
Mar. 15	76,617	July 19	76,155
Mar. 22	73,851	July 26	74,353
Mar. 29	73,592	Aug. 2	76,762
Apr. 5	75,127	Aug. 9	62,961
Apr. 12	72,045	Aug. 16	70,248
Apr. 19	76,970	Aug. 23	76,551
Apr. 26	79,147	1940 Low	58,516
May 3	71,827	1940 High	85,584

Production and Inventory of Pennsylvania Lubricating Oils

(Compiled by National Petroleum Assn. from reports of all companies which refine Pennsylvania crude oil. Figures in bbls.)

	Total Production July, '41	Inventory July 31, '41	Inventory June 30, '41	Inventory July 31, '40
1—Raw Long Residuum	98,724	70,826	48,327	29,626
2—600 S. R. Stock	294,213	257,537	248,990	267,720
3—Other S. R. Stock	62,924	102,268	109,309	101,079
4—Fin. Long Residuum	49,427	35,645	33,355	54,771
5—Bright Stock	172,348	246,029	280,019	462,642
6—Viscous Neutral	77,180	46,571	52,735	175,126
7—Viscous Neutral	116,803	71,089	85,061	128,681

Item 1 includes all raw long residuum below, and not salable as, 600 fire.
Item 2 includes all steam refined stock commonly sold or used as 600 and as raw material for bright stock.
Item 3 includes steam refined stock not reported in items 1 & 2.
Item 4 includes finished dewaxed long residuum.
Item 5 includes material not reported in item 4.
Item 6 includes viscous neutral below 180 vis. but not below 142 vis. @ 100.
Item 7 includes viscous neutral of 180 vis. @ 100 and above.

Mid-Continent Lube Statistics July 1941

(Reported by Western Pet. Refiners Ass'n. covering operations of 12 member reporting companies; figures in bbls.)

	Bright Stock	Viscous Neutrals	Paraffin Oils	Steam Refined* Stock	Blended Oils
Production	249,563	310,436	71,937	21,374*	239,426
Shipments:					
Domestic	239,402	316,025	75,027	57,646*	254,139
Export	76,698	8,622	791	144*	10,862
TOTAL	316,100	324,647	75,818	57,790*	265,001
Inventory July 31, 1941	197,728	249,986	53,162	33,735*	133,925
Inventory June 30, 1941	264,265	264,197	57,043	70,151*	159,500
Inventory July 31, 1940	376,260	295,079	59,146	81,130*	125,187

*New basis of reporting began January 1940.

STATISTICS

Report of Refinery Operations

(American Petroleum Institute Figures in Thousands of Barrels of 42 Gallons each)

Districts	Daily Average Crude Runs to Stills Week Ended Aug. 30	Aug. 23	Per Cent of Reporting Capacity Operated Week Ended Aug. 30	Aug. 23	Gasoline Production at Refineries incl. Natural Blended Week Ended Aug. 30	Aug. 23	Total Stocks Finished & Unfinished Gasoline Week Ended Aug. 30	Aug. 23
East Coast	644	615	95.7	91.4	1,654	1,688	20,261	20,094
Appalachian	133	129	95.7	92.8	437	459	3,070	2,950
Ind., Ill., Ky.	637	625	100.3	98.4	2,497	2,378	14,438	14,825
Okla., Kans., Mo.	309	305	92.8	91.6	1,242	1,197	6,672	6,767
Inland Texas	153	141	92.2	84.9	663	654	2,243	2,182
Texas Gulf	963	984	96.4	98.5	3,099	3,191	11,148	11,465
La. Gulf	155	149	104.7	106.4	337	357	3,128	3,205
N. La., Ark.	51	55	108.5	117.0	158	149	378	388
Rocky Mt.	55	50	80.9	73.5	252	249	1,050	1,083
California	616	571	86.2	79.9	1,623	1,578	13,734	13,957
Reported	3,716	3,624	94.7	92.6	11,962	11,900	76,122	76,916
Estimated Unreported	354	351			1,330	1,320	5,550	5,650
U. S. Total*	4,070	3,975			13,292	13,220	81,672	82,566
U. S. Total 8-30-40*	3,508				11,468		84,047	

Districts	Total Stocks Gas Oil & Distillates Week Ended Aug. 30	Aug. 23	Total Stocks Residual Fuel Oil Week Ended Aug. 30	Aug. 23	Stocks Aviation Gasoline Included in Finished & Unfinished Gasoline Total Week Ended Aug. 30	Aug. 23
East Coast	15,266	14,896	9,127	8,791	**East Coast**	
Appalachian	533	582	634	561	703	663
Ind., Ill., Ky.	5,207	4,884	4,262	4,099	**Interior**	
Okla., Kans., Mo.	1,951	1,910	2,027	1,948	1,325	1,284
Inland Texas	442	439	1,320	1,323	**Gulf Coast**	
Texas Gulf	6,413	6,264	8,107	8,242	3,142	3,142
La. Gulf	1,539	1,510	1,765	1,771	**California**	
N. La., Ark.	330	321	411	425	1,733	1,743
Rocky Mt.	127	121	427	429		
California	12,443	12,330	65,472	65,219		
Reported	44,251	43,257	93,552	92,808	6,903	6,832
Estimated Unreported	1,100	1,025	1,500	1,500	365	360
U. S. Total*	45,351	44,282	95,052	94,308	7,268	7,192
U. S. Total 8-30-40*	44,678		107,155		5,760	

*Estimated, U. S. Bureau of Mines basis.

Crude Oil Stocks

(U. S. Bureau of Mines figures; thousands of barrels)

Grade or Origin	Aug. 9	Aug. 16	Aug. 23	Change from Aug. 16
Pennsylvania Grade	4,051	4,058	4,037	— 21
Other Appalachian	1,417	1,468	1,419	— 49
Lima-Michigan	1,017	1,033	1,035	+ 2
Illinois-Indiana	18,991	18,820	18,469	— 351
Arkansas	2,288	2,320	2,265	— 55
Kansas	7,541	7,663	7,725	+ 62
Northern Louisiana	4,341	4,268	4,278	+ 10
Gulf Louisiana	8,406	8,279	8,245	— 34
Mississippi	2,090	2,181	2,198	+ 17
New Mexico	7,234	7,037	7,061	+ 24
Oklahoma	55,362	54,890	54,577	— 313
East Texas	21,122	21,019	20,395	— 624
West Texas	16,104	16,326	16,433	+ 107
Gulf Texas	24,619	24,565	24,710	+ 145
Other Texas	22,926	22,865	22,602	— 263
Rocky Mountain	15,992	15,940	16,121	+ 181
California	35,133	35,043	34,851	— 192
Foreign	3,311	3,238	2,489	— 749
Total United States refinable	251,945	251,013	248,910	—2,103
Heavy in California	10,604	10,711	10,801	+ 90
East Coast—refinery and transit	14,253	*14,105	13,644	— 461
East Coast—pipe line (estimated)	550	550	550	...
Total	14,803	15,255	14,194	— 461

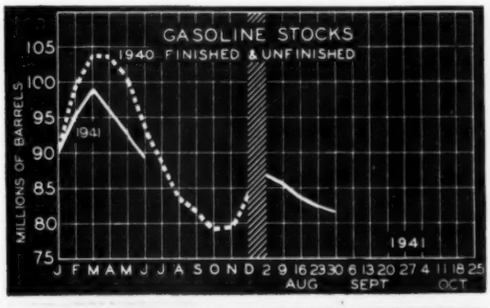
*Revised.

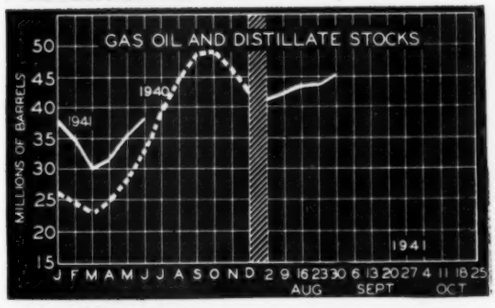
Crude Oil Production

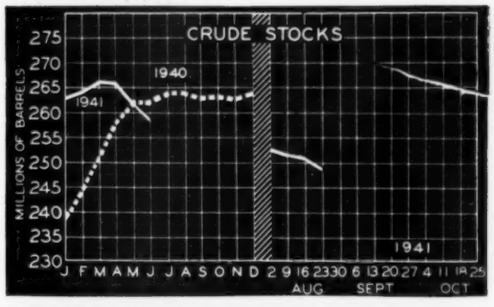
(American Petroleum Institute figures)

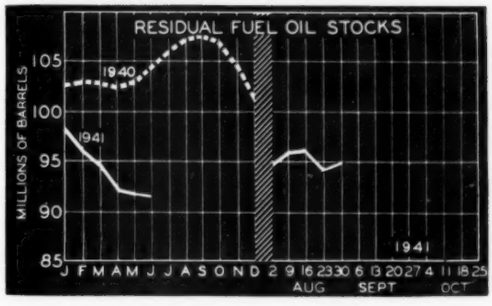
	—WEEK ENDED— Aug. 30 Barrels (Daily Average)	Aug. 23 Barrels
Oklahoma	427,650	427,400
Kansas	254,300	254,550
Nebraska	7,350	7,350
Texas	1,449,300	1,441,400
Louisiana	333,900	327,300
Arkansas	74,650	74,350
Mississippi	50,600	48,000
Illinois	391,100	385,600
Indiana	20,250	21,000
Eastern (Ill. & Ind. excluded)	95,150	90,800
Michigan	47,250	42,000
Wyoming	84,750	83,200
Montana	20,350	20,300
Colorado	3,900	3,900
New Mexico	113,800	113,700
California	630,400	634,600
Total U. S.	4,004,700	3,975,450
Crude Imports	143,430	147,570
Total New Supply	4,148,130	4,123,020

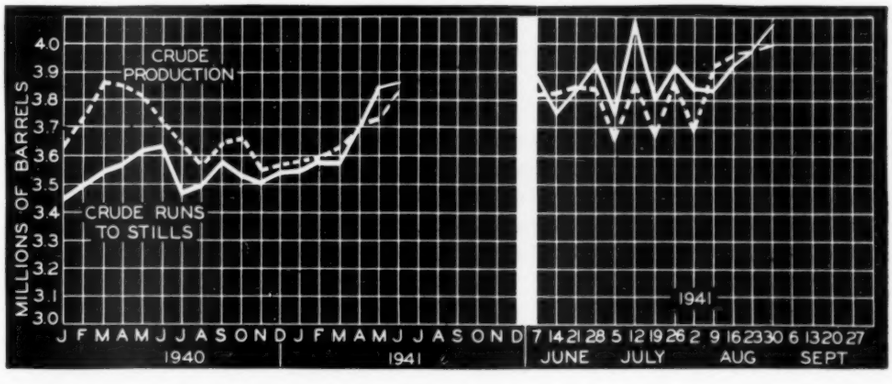
Monthly figures are actual as reported by Bureau of Mines. Weekly figures are as estimated by American Petroleum Institute on Bureau of Mines basis, except crude stocks which are as reported by Bureau of Mines.











NATIONAL PETROLEUM NEWS—September 3, 1941—Vol. XXXIII—No. 36

Published every week at 1213 West 3rd St., Cleveland, Ohio, U. S. A. Subscription rate $3.00 per year in United States and Mexico; $4.50 Canada and foreign countries. Entered as second class matter Jan. 17, 1910 at Cleveland, O., post office under act of March 3, 1879, by The National Petroleum Publishing Co. Copyright 1941 The National Petroleum Publishing Company.

Works On East Coast Marketing Problems

H. W. Dodge

● Key man in solving myriad problems which followed in the wake of the East Coast gasoline curtailment program is H. W. Dodge, an oil man whose 25 years in the industry trace an uphill climb from office boy to vice-president and sales manager of The Texas Co.

He is chairman of the District 1 marketing committee, charged with administration of recommendations from the Petroleum Co-ordinator's Office. Mr. Dodge's committee is constantly studying, analyzing and advising PCO on marketing problems encountered in, for instance, finding homes for "orphan" accounts and determining how deeply suppliers must cut gasoline deliveries.

Born in Cameron, Texas, in 1891, Mr. Dodge attended Beaumont public schools, Rice Institute at Houston and later the University of Texas. Married, he has two children: H. W. Dodge, Jr., and Elizabeth Jane Dodge. Besides his home, Mr. Dodge turns his "after-hours" attention to golf and bridge.

NATIONAL PETROLEUM NEWS

VOLUME 33 WEDNESDAY, SEPTEMBER 3, 1941 NUMBER 36

Oil and Rails Discuss Plans To Serve East

NPN News Bureau

TULSA, Sept. 3—Railroads have been called upon to join hands with District 1 Transportation Committee in solving the transportation bottleneck that threatens Atlantic Coast consumers with shortage of petroleum products.

They meet in Washington Sept. 4 to discuss means of transporting crude and petroleum products from the Southwest and Mid-west to Atlantic Coast area at a cost that will not materially increase consumer prices at destination. This is said to represent the first all-out joint effort of the industry and railroads to supply the East Coast transportation deficiency.

After East Coast transportation problem has been outlined to railroad executives, proposal will be placed on table for joint consideration. It provides that heavy oil rates from southwestern and mid-western origin points to Atlantic Coast area be based 12% of present first class rates. Light oil rates would, in turn, be figured on basis of 125% of the above heavy oil rates.

The proposed schedule, in effect, would place petroleum rates on mileage scale, rather than on present origin-group basis. Present rate from Oklahoma, the Shreveport-El Dorado and New Orleans groups to New York City is 5.346c per gal. Under the proposed setup, different rates from the origin groups would be posted, representing reductions that range from 1.914 to 2.607c per gal. on shipments from the southwest to New York City. In some cases, these reductions represent cuts of as much as 50% under present rates.

Proposed Schedule

Shown below are present and proposed rates from several southwestern origin groups to New York City. Rates are in cents per gal. of gasoline shipped. Heavy oil rates would be figured at 80% of these rates.

Origin	Present	Proposed
El Dorado, Ark.	5.346	3.234
Tulsa	5.346	3.234
Oklahoma City	5.346	3.432
New Orleans	5.346	2.739

Traffic men indicate the rev-

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June 'Gas' Demand Shows 5% Increase

NPN News Bureau

WASHINGTON, Sept. 2. — While voluntary curtailment on part of civilians may have accounted for the increase of only 5% in June's domestic motor fuel demand, aviation gasoline demand in the same period was 40% ahead of last year with aviation stocks nearly as high, according to Bureau of Mines announcement last week.

June's domestic motor fuel demand was 58,413,000 bbls., contrasted with 55,459,000 bbls. for June, 1940, and 59,325,000 bbls. for May, 1941.

Excluding the tanker "shuttle" movement, motor fuel exports totaled 1,262,000 bbls., or only about 50% of the total last year. Stocks of finished and unfinished gasoline declined about 3,100,000 bbls. in June, Bureau reported.

Motor fuel stocks on June 30, were 89,842,000 bbls., or 4,000,000 bbls. below last year's level.

In refinery yields, principal changes in June were an increase of 3% in gasoline.

WASHINGTON BULLETINS

ANTI-FREEZE LIMITED

WASHINGTON — Priorities control has been applied to ethyl alcohol. In sale of such alcohol as an anti-freeze, cars and trucks engaged in defense or essential services will get first call.

APPROVES DELIVERY CUT

WASHINGTON — PCO Chief Counsel Marshall has wired Chairman Dodge of Eastern Marketing Committee approving recommendation for reduction in gasoline deliveries to retail outlets to 85% of July, 1941, deliveries. There was no mention of how much refiners should curtail jobbers (jobbers themselves will have to cut deliveries to their own stations and deliveries to the 85% level).

FDR SIGNS PROCLAMATION

WASHINGTON — Proclamation granting Southeastern gasoline pipeline project eminent domain in securing right-of-way for its line from Port St. Joe, Fla., to Chattanooga, Tenn., was signed today by President Roosevelt under authority of Cole Pipeline Act.

Rails Claim Answer To East's Oil Needs

SENATE OIL PROBE

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NPN News Bureau

WASHINGTON, Sept. 3.—A many-angled tank car discussion, with J. J. Pelley, president of Assn. of American Railroads, holding that there are sufficient surplus tank cars to meet the East Coast oil "shortage" and that the railroads have the necessary transportation facilities, highlighted today's senatorial hearing on the investigation of East Coast oil "shortage." Mr. Pelley was the sole witness.

Divesting himself of any direct knowledge of an East Coast oil "shortage," Mr. Pelley stated that if such existed and if 174,000 bbls. daily (figure from Petroleum Co-ordinator's Office) would relieve this shortage, that there are enough tank cars. Moreover, the railroads "could transport a minimum of 200,000 bbls. daily to the Atlantic seaboard," he said.

Repeated questioning by Chairman Maloney (D), Connecticut, about any "reluctance" to produce necessary tank cars, and a statement from him at one point in the hearing that "something was said the other day about sabotage," brought the answer from Mr. Pelley that as far as he knew higher transportation costs were the sole reason why tank cars were not being used.

Cites A.P.I. Report

In a statement to the committee, Mr. Pelley said: "In May, 1941, a fact-finding committee that was named by the American Petroleum Institute looked into the tank car question and this committee confirmed the fact that 20,000 surplus tank cars were available and that this equipment would move from 6 to 8 million barrels of oil per month from Texas to Atlantic seaboard.

"Within the past week, I have seen reports of another study made of this tank car situation. This report was made by a man selected by the tank car owners and lessees and from the results tabulated to date it is still evident that there is a surplus of some 20,000 tank cars." Mr. Pelley discounted charges that this was a theoretical study.

Stating that "some confusion exists in some quarters as to just where these surplus cars can be found," Mr. Pelley said they were on sidings at refineries and other locations, mostly in private yards.

Offered Davies Help

Several instances were cited by the A.A.R. president, purporting to show that the standing tank cars are surplus.

Expressing amazement at Deputy Petroleum Co-ordinator Davies' statement before the Maloney investigating committee last week about the elusiveness of tank cars, Mr. Pelley said that he had offered Mr. Davies his full co-operation, but "I have never had any request from Mr. Davies for any information." Sen. Maloney viewed this as "interesting."

At the close of Mr. Pelley's statement he said that PCO's first request for a meeting with the railroads' traffic executives was Aug. 30 when oil company representatives, headed by PCO's Director of Transportation H. A. Gilbert, indicated they wished to discuss general petroleum rate reductions from the mid-west to Atlantic sea-

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Canada May Pool All Oil Supplies

By Telephone

TORONTO, Sept. 3. — Questioned on reports in the U. S. that Canada has pooled its supplies of petroleum products, John L. Stewart, deputy Canadian oil controller, told NPN today that this step is "under consideration" by Oil Controller George R. Cottrelle's office.

Extent of these "considerations" could not be learned, but indications were that machinery is virtually ready for an immediate go-ahead when final decision is made.

Asked if a board would be set up to handle allocations, Mr. Stewart replied that there already are industry advisory committees to the oil controller's office. Presumably, these committees would handle the

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Jobbers Complain of Treatment During 'Shortage' on East Coast

By A. M. PETTY, NPN News Editor

CLEVELAND, Sept. 2—A variety of complaints from independent oil jobbers is beginning to spring up in widely-scattered sections, with some going to the Petroleum Co-ordinator's Office, some to Justice Department's anti-trust division and some to the Senate Oil Shortage Investigating Committee and to individual senators and congressmen.

Mostly, these complaints concern difficulties in obtaining supplies. In the East, these difficulties have been accentuated by the recent order curtailing gasoline deliveries.

The curtailment order was promulgated Aug. 15 by Leon Henderson, as OPACS administrator, on recommendation of Co-ordinator Ickes.

Briefly, the order provides that no supplier shall deliver in any month to resellers and consumers more than 90% of the amount of gasoline delivered by him in July, 1941 to resellers and consumers. This has been generally interpreted to mean that no jobber can obtain from his supplier monthly deliveries totaling more than 90% of his July takings *from the same supplier*. Certain consumers—commercial vehicles, farm trucks, emergency vehicles and government vehicles—are to be given "preference" and are entitled to a full 100% of their requirements.

Jobber Complaints Listed

Some of the complaints being voiced by jobbers include charges:

That the curtailment order "freezes" accounts and prevents jobbers from switching to a new source of supply.

That some major companies are taking advantage of the "freeze" to propose new—and less satisfactory—contract terms to their jobbers.

That unbranded jobbers have been cut off from supplies and are shut off from seeking new suppliers outside the "shortage" area.

That jobbers cannot get as much gasoline as they are "entitled" to under the curtailment order to supply existing accounts.

That major companies are seemingly free to take on new tankwagon accounts—and are doing so in some areas.

That jobbers, with a sizeable percentage of commercial and farm trade (entitled to 100% of their requirements under the curtailment order), have had to curtail their dealer accounts far more than major companies in same area are doing to their dealers.

That the majors "only too willingly" agreed last spring with OPACS to keep tankwagon prices at existing levels but tank car prices have continued to advance, thus "squeezing" the jobber's margin.

That "only the major companies know what is going on" and so can shape their policies accordingly.

PCO Comment Cited

Commenting on some of these complaints, PCO officials point out several developments under way which they expect will "solve" some of the problems.

Eastern marketing advisory committee has been asked by the co-ordinator's office to draft a program for taking care of "orphan" accounts—the open spot market buyers and others without contracts who have bought from one or a dozen suppliers during the past year. PCO's attitude is that contractless buyers are entitled to equality of treatment with contract buyers.

The marketing committee—along with other advisory groups in the East—has been asked to devise a "general plan" for spreading "the burden of higher transportation costs more widely and more equitably throughout the industry." Presumably, such a plan would aim at prorating the higher costs among the entire gallonage to encourage use of tank cars and other available transportation media costing more than tankers.

The committee also is expected to encourage exchange among suppliers—and jobbers are suppliers—so that the percentage of curtailment which each is required to impose on different classes of trade may be equalized. PCO has also requested the committee to determine percentage of curtailment for all non-preferred deliveries to and by service stations and to consumers by suppliers.

Jobber Cannot Exchange

For the unbranded jobber, these contemplated steps should be helpful.

But the branded jobber—or distributor, as he is called in the North Atlantic section—is stymied. He cannot buy unbranded gasoline and put it through his pumps—that would be substitution. He cannot exchange or borrow gasoline from another jobber because that, too, would be substitution. And he would probably find it difficult to borrow from a brother jobber handling the same brand. So, his only hope is to obtain more gasoline from his present supplier.

Some branded jobbers report difficulties in obtaining additional supplies from their suppliers, even though large deliveries to preferred consumers (as required in the order) has forced jobbers to curtail deliveries to their dealers by 20% or more.

Some jobbers fear they will lose dealer accounts because they are unable to supply them with the full amount permitted under the curtailment order. On this, one PCO official commented that major companies are not out after new business. But if there is a "moratorium" on solicitation of new accounts, nothing has been announced publicly about it.

'Tied to Present Supplier'

Another complaint from jobbers is that the curtailment order ties them tightly to their present source of supply. Some branded jobbers complain that their suppliers are tightening up on contract terms. In one area, jobbers say one supplier has notified its jobbers that contracts will not be renewed with a marginal protection clause (discount off tankwagon price), that new contracts will be based on the supplier's own posted tank car price, alone.

Unbranded jobbers, especially those on fringe of the "shortage" area, complain that the curtailment order bars them from new sources of supply—that is, by apparently limiting their takings to suppliers they bought from in July. And this, they say, prevents them from seeking a new supplier with "plenty" of gasoline such as Western Pennsylvania refiners or terminals and other sources in western Florida, Tennessee, Alabama, Kentucky and Ohio.

Jobbers in the Philadelphia, Baltimore, and Norfolk areas are particularly bitter over what they regard as a "squeeze". While tankwagon prices have not changed since the "agreement" with OPACS last May, tank car prices have advanced as much as 0.5c.

'Only the Majors Know'

Unanswered, so far, is the complaint that "only the majors know what is going on." Major companies, even those without representation on the committees, seem to know what moves are in prospect and can shape their policies to meet the expected changes, jobbers say. Also, the majors seem to know how the PCO and the advisory committees expect a recommendation by the co-ordinator to be carried out—even though there has been no interpretation released publicly or announced by either agency.

For example, one question about application of the curtailment order was:

What should be done about new stations which have opened since July or stations closed during July but since reopened? How much supplies, if any, are they entitled to—90% of nothing still being nothing?

Most major companies, it seems, are estimating a July gallonage for such stations and delivering 90% of that estimate. Persistent inquiry by NPN, both of committee members and the PCO, brought the comment that "we intended the curtailment order to be interpreted that way." But nothing "official" was given out on this interpretation.

Jobbers, however, were not

Senate Provides $12,500 For Oil Shortage Probe

WASHINGTON, Sept. 2.—Senate approved Maloney resolution creating a five-man special Senate oil investigating committee by a voice vote this past week. Measure provides $12,500 for investigating expenses.

Members of Maloney Commerce subcommittee, which opened hearings Aug. 28 on East Coast oil shortage, were appointed to special investigating committee by Vice-President Wallace, who named Senator Maloney, (D), Connecticut, chairman. Commerce subcommittee ceased to function with appointment of special committee, according to Sen. Maloney.

alone in their "ignorance" of how the order was intended to be interpreted. Two weeks after the curtailment order went into effect, the vice-president of an eastern major company told this NPN writer that his company was "obeying the order strictly and not making deliveries to any accounts which the company had not served during July."

Complaints to D. J.

Complaints "by the hundreds" have been sent to the Department of Justice alleging difficulties in obtaining supplies.

One western Pennsylvania refiner—and there may be others—is reported to be delivering 100% of requirements of jobber accounts, and leaving it to the jobbers to see that their company-operated stations and dealers are curtailed the required percentage. This gives these jobbers enough to take care of their commercial business and other "preferred" trade, yet still have something to accommodate increased takings by some of these accounts. Some other Pennsylvania refiners say they have curtailed their jobbers; one refiner reports making 100% deliveries to a major company under contract.

The Senate investigating committee is getting complaints from fuel oil marketers about their difficulties. Committee, headed by Sen. Maloney, Conn., has indicated that providing fuel for defense industries and heat for homes is one of its prime objectives.

Erie Dealer Defies Curfew on Stations

NPN News Bureau

CLEVELAND, Sept. 3.—The 7 p. m. to 7 a. m. curfew on gasoline sales at service stations in the East, recommended by Petroleum Co-ordinator Ickes, was a month old today but the outstanding recalcitrant was still reported running his station wide open, 24 hours a day.

He is an Erie, Pa., dealer handling a major company's branded products, and has boldly said he will sell gasoline to any one at any time, day or night. Reports are that he has had to install additional storage tanks to take care of increased gallonage.

Co-ordinator Ickes' recommendation of July 31 requested that suppliers co-operate to obtain observance of curfew at their outlets, even to the extent of "refusal to make further deliveries" in the event of any "continued and deliberate" failure by any retailer to comply.

So far as is known there has been no move by the Erie station operator's supplier to cut off his supplies.

OPACS Prescribes 4c Margin For East Coast 'Gas' Dealers

NPN News Bureau

WASHINGTON, Sept. 2—"As a guide to both motorists and service station operators", Price Chief Leon Henderson, this past week, issued a schedule of "fair maximum retail prices" for "regular" gasoline in 40 eastern cities.

Beginning with cities in Massachusetts, OPACS plans to issue similar price schedules for smaller cities in the East Coast area.

OPACS' prices range from 16.5c in Washington, D. C., to 20.1c in Manchester, N. H. Retail prices listed for each city are the aggregate of the following 3 "cost factors", states OPACS announcement. They are:

"1. The tank wagon price now being charged by major oil companies.

"2. State and federal taxes now in effect.

"3. A uniform dealer margin of 4c per gal."

'Considered Reasonable'

The OPACS announcement stated, in part: "The dealer margin, or the difference between what the dealer pays and what he sells for, of 4c per gal. is considered reasonable at this time. This margin is lower than that now prevailing in most areas where increases in retail prices have occurred in the last few days, but is higher than the margin prevailing in many cities prior to curtailment of supplies.

"This margin of 4c is believed justified by the lower volume of sales on which stations will have to operate as long as supplies are curtailed. However, it is not intended to serve as a standard when the emergency is over."

Prevailing T.W. Prices

Pointing out that the majors have an informal agreement with OPACS not to raise tank wagon prices without notifying this government agency, the announcement said: "The tank wagon prices used in making up the retail prices are those which have prevailed for the past several months."

All motorists were urged to carry a copy of the price schedule with them and to "protest vigorously against prices higher than those listed for these cities."

OPACS "fair maximum" prices follow:

Schedule of Fair Maximum Retail Service Station Prices "Regular" Gasoline

Location	Tank Wagon Price	Taxes State & Federal	Dealer Margin	Fair Maximum Retail Service Station Price
Portland, Maine	9.6c	5.5c	4.0c	19.1c
Manchester, N. H.	10.6	5.5	4.0	20.1
Burlington, Vt.	10.2	5.5	4.0	19.7
Boston, Mass.	9.2	4.5	4.0	17.7
Worcester, Mass.	9.8	4.5	4.0	18.3
Springfield, Mass.	10.1	4.5	4.0	18.6
Cambridge, Mass.	9.2	4.5	4.0	17.7
Fall River, Mass.	9.3	4.5	4.0	17.8
New Bedford, Mass.	9.7	4.5	4.0	18.2
Somerville, Mass.	9.2	4.5	4.0	17.7
Lowell, Mass.	9.7	4.5	4.0	18.2
Pittsfield, Mass.	9.8	4.5	4.0	18.3
Providence, R. I.	9.3	4.5	4.0	17.8
Hartford, Conn.	9.9	4.5	4.0	18.4
New Haven, Conn.	9.3	4.5	4.0	17.8
Bridgeport, Conn.	9.3	4.5	4.0	17.8
New York, N. Y.	9.4	5.5	4.0	18.9
Buffalo, N. Y.	9.5	5.5	4.0	19.0
Rochester, N. Y.	10.1	5.5	4.0	19.6
Syracuse, N. Y.	9.8	5.5	4.0	19.3
Yonkers, N. Y.	9.4	5.5	4.0	18.9
Albany, N. Y.	9.2	5.5	4.0	18.7
Utica, N. Y.	10.2	5.5	4.0	19.7
Newark, N. J.	9.0	4.5	4.0	17.5
Jersey City, N. J.	9.0	4.5	4.0	17.5
Paterson, N. J.	9.0	4.5	4.0	17.5
Trenton, N. J.	9.0	4.5	4.0	17.5
Camden, N. J.	9.0	4.5	4.0	17.5
Elizabeth, N. J.	9.0	4.5	4.0	17.5
Philadelphia, Pa.	9.0	5.5	4.0	18.5
Pittsburgh, Pa.	9.5	5.5	4.0	19.0
Scranton, Pa.	9.5	5.5	4.0	19.0
Erie, Pa.	9.5	5.5	4.0	19.0
Reading, Pa.	9.5	5.5	4.0	19.0
Hazeltine, Pa.	9.5	5.5	4.0	19.0
Wilmington, Del.	9.0	5.5	4.0	18.5
Baltimore, Md.	8.75	5.5	4.0	18.2
Washington, D. C.	9.0	3.5	4.0	16.5
Richmond, Va.	9.5	6.5	4.0	20.0
Norfolk, Va.	9.25	6.5	4.0	19.75

Asks Mayors to Inform Public On 'Fair' Gasoline Prices

NPN News Bureau

WASHINGTON, Sept. 2.—To keep public informed about "maximum fair retail price for gasoline in your city", Price Chief Leon Henderson has sent telegrams to mayors of 40 eastern cities seeking their co-operation. Telegrams are all the same, save for whatever prescribed price is in each city.

Text of telegrams follows:

"The maximum fair retail price for gasoline in your city and surrounding area has been recommended to be not more than (prices differed in various cities) cents per gallon. This amount allows for a uniform dealer margin of four cents per gallon which is above the amount actually realized by dealers during the past few months and should compensate them for the loss which may be occasioned under the curtailment of deliveries to service stations. A substantial majority of dealers everywhere are complying with these prices but apparently persons claiming to be representatives of dealers have influenced a minority of dealers to charge excessive prices in some cities.

"I should appreciate your co-operation in informing the motoring public in your city of our recommended maximum prices and in using the influence of your office to restrain profiteering in this emergency."

Holcomb to Head D. J.'s Small Business Section

NPN News Bureau

WASHINGTON, Sept. 2.—Guy Holcomb, Atlanta, Ga., was named chief of the Justice Department's new small business section by Assistant Attorney General Thurman Arnold, according to announcement today. Mr. Holcomb is vice-president of the National Assn. of Petroleum Retailers and president of Georgia Assn. of Petroleum Retailers.

Mr. Holcomb will head a staff of anti-trust division economists, investigators and experts on the problems of small business arising under the anti-trust laws, Mr. Arnold said, adding that new small business section also will assist small business enterprises in their relations with the federal government, including those connected with the defense program.

McNeese Gets OPA Job

NPN News Bureau

WASHINGTON, Sept. 2.—Appointment of Charles H. McNeese, Ponca City, Okla., to the Office of Price Administration's fuel section was announced today by Assistant Administrator J. K. Galbraith. Mr. McNeese formerly was a valuation engineer with Continental Oil Co., OPA said.

Railroads Claim Answer To East Coast 'Shortage'

(*Continued from page 5*)

board states. This meeting was arranged for Sept. 4.

(*For details on this proposed meeting, see other story in NPN—Editor*)

Tells of Rate Cuts

At the request of Petroleum shippers, railroads within past few weeks have put in 41 reduced rates for movement of crude and have 40 additional requests "which will get prompt consideration."

During course of hearing, Sen. Burton, (R), Ohio, asked Mr. Pelley if there would be need for any capital investment, to which the A. A. R. head stated none and that the railroads had sufficient locomotives to move cars from Texas and Louisiana to East Coast.

Sen. O'Daniel, (D), Texas, asked if there were a need for the proposed crude pipeline from East Texas to New York and Philadelphia area. Mr. Pelley replied that he was not too familiar with this need but that it seemed to him a question of whether there was enough steel to build such a line when Office of Production Management estimates that ordinary railroad car loadings in the next year will approximate 1,000,000 per month. If this is so, Mr. Pelley continued, railroads will need steel for an additional 150,000 railroad cars, mostly box cars.

'Would Take 2 Weeks'

Intensive questioning of Mr. Pelley by the committee about how soon railroads could start hauling 200,000 bbls. of oil daily to East Coast, brought answer that it could be done within 2 weeks and could have been done before had PCO requested it.

Later, Senator O'Daniel asked if railroads had tried to delay construction of Plantation Pipeline, to which Mr. Pelley was a first a bit indefinite, but finally answered "yes". The Texas senator then asked if railroads had tried to block the Cole Pipeline Bill, to which Mr. Pelley replied that the railroad interests had tried "to make it more palatable", frankly admitting that the rails didn't like to lose potential business.

'Whose Move Now?'

In summing up testimony presented to committee by PCO's Davies, Maritime Commission's Land and A. A. R.'s Pelley, Sen. Maloney asked "who's move is it now?". Mr. Pelley said he thought it might be up to the oil companies, but it was Chairman Maloney's belief that it is up to PCO.

Committee hearings resume Sept. 4, at which time, Ralph Budd, defense transportation commissioner will be heard, with the possibility of Leon Henderson, head of Office of Price Administration. Asked by NPN who additional witnesses would be, Senator Maloney said it was still indefinite. However, indications are that before hearings end, Petroleum Co-ordinator Ickes will appear. PCO reports Mr. Ickes due to return from his vacation about Sept. 15.

Oil Men Meet with Rails To Plan Relief for East

(*Continued from page 5*)

enue per ton mile under the proposal would approximate that revenue derived by rails under those Interstate Commission approved rates now in effect from Southwest to Middle West. Based on this study some southwestern students of transportation believe there will be little objection to the Washington proposal.

Immediate action to provide necessary rate reductions that would enable railroads to fill the transportation gap left by governmental requisitioning of tankers in Gulf Coast to Atlantic Coast service is expected. Some observers were hopeful a scale of reduced rates would be approved by railroad executives before they leave Washington.

Some Protest Plan

While southwestern refiners, who will probably be called upon to supply much of the crude and petroleum products needed on Atlantic Coast probably will not be in attendance at meeting, their views will be carried to Washington by southwestern railroad executives.

Divergent reaction to proposal to be submitted at Washington meeting has been encountered in southwest. For most part, however, southwestern shippers dislike idea of posting rail rates on mileage scale because it will destroy present origin relationships as between refining groups. Southwestern refiners probably would not be adverse to basing Group 3 (Oklahoma) rates on the basis to be outlined at Washington. It has been suggested that objections to proposal could be eliminated partially by using this new Group 3 schedule as base and on which present origin group relationships would be maintained.

If present origin relationships could be maintained on basis of reduced Group 3 rates, short back haul shipments of petroleum by rail from East Coast seaports inland could be eliminated and these tank cars put into cross country service.

See Trainload Shipments

If rails should publish cross-country rates similar to those to be suggested at Washington, shippers see possibility of trainload movements of southwestern and mid-western crudes and petroleum products at passenger train schedules to East Coast. It has been suggested that co-operative industry-rail program could be outlined whereby shippers would assemble petroleum shipments at such key points as Kansas City, St. Louis, Chi-

NPN's Washington Directory OF Oil Agency Headquarters

Following is a partial list and directory of governmental agencies in Washington dealing with matters affecting the oil industry: (List is as accurate as possible but is only tentative, as changes are constantly occurring in room and phone numbers)

Petroleum Co-ordinator—Harold L. Ickes
Interior Department (New Building), 18th and C Streets N. W.

Deputy Petroleum Co-ordinator—Ralph K. Davies
New Interior Building, Room 6654, Extension 3831-2

Interior Department Phone Number—Republic 1820

Petroleum Co-ordinator's Staff
6th and 7th Floors, New Interior Building

Special Assistant—
George W. Holland, Room 7312, Extension 643

Director of Production—
Robert E. Allen, Room 6647, Extension 3334

Director of Refining—
Wright W. Gary, Room 6637, Extension 3233

Director of Transportation—
H. A. Gilbert, Room 6629, Extension 4418

Director of Marketing—
John W. Frey, Room 6623, Extension 4646

Director of Research—
Edward B. Swanson, Room 7313, Extension 649

Director of Conservation—
Everett Lee De Golyer, Room 6618, Extension 4459

Chief Counsel—
J. Howard Marshall, Room 6649, Extension 4100

OPM Priority Consultant—
James E. Hughes, Room 7427, Extension 4616

Executive Officer—
Stanley W. Crosthwait, Room 6415, Extension 4363

Special Assistant (Liaison)—
William S. Arnold, Room 6626, Extension 4446

Director of Information—
Herbert A. Yocom, Room 6420, Extension 3844

Petroleum Receptionist—
Mrs. Rosalie E. Reid, Room 6635, Extension 3429

Oil Section, Office of Production Management—
New Social Security Building, Room 4062. **Dr. Walter Whitman,** petroleum consultant for OPM, Phone Number Republic 7500, Extension 2564; Staff: **C. C. Monrad**

Office of Price Administration—
4th and Independence Avenue, Temporary Building D, Republic 5050. **Dr. J. K. Galbraith,** assistant administrator in charge of price division, Extension 673; **Quinn Shaughnessy,** price executive of fuel section, Extension 684; **J. Elmer Thomas,** assistant, Extension 470

U. S. Maritime Commission—
M. W. Bowen, tankers, Commerce Department, Room 4319

Congressional Oil Investigating Committee—
Rep. Wm. P. Cole, Jr., Chairman, New House Office Building, Room 1535

cago and Memphis, there to be assimilated into long trains each pulled by two fast engines. To facilitate deliveries, arrangements could be made whereby all shipments during any one day could be handled by one railroad, those of the following day by another line, etc.

Estimate 350 Cars Daily

Since railroads will not be called upon to supply all the East Coast transportation deficiency, southwestern observers estimated a movement of 350 cars of crude and petroleum products daily from the Southwest and Mid-West would probably go a long way in supplying East Coast needs. Each tank car could make 2 trips per month.

Thus might be re-lived in the Mid-Continent those days back in 1928 when the country folks assembled at the wayside station each morning at 8:47 to see the "King George Special" whizz its trainload of crude from the Seminole, Okla., oil field to refineries in Canada, all on near-passenger train schedule.

PCO Is Seeking Lower Rail Rates

NPN News Bureau

WASHINGTON, Sept. 2. — Seeking reduction in rail rates on petroleum products "at the earliest possible date", Acting Petroleum Co-ordinator Davies today said he had approved a proposal for a meeting between the Tank Car Subcommittee of the Oil Industry Transportation Committee for District 1 and railroad traffic executives.

This proposal has been sent to Assn. of American Railroads, Mr. Davies said, and it is his understanding that such a meeting is being planned.

The Tank Car Subcommittee has proposed that railroads seek permission of Interstate Commerce Commission to publish new rates on one day's notice instead of usual 90 days. It was also proposed that necessary action be taken to speed movement of empty and loaded cars. Mr. Davies' statement follows:

"This office is convinced that a fuller use of tank cars would contribute to easing the petroleum shortage in the Eastern states. That shortage, of course, springs from the fact that a number of tankers, on which the seaboard territory had come to be dependent for its supply of petroleum and petroleum products, have been diverted to defense uses.

"Naturally, therefore, we must seek substitute methods of transportation, including tank cars. The carriers, working in conjunction with the Tank Car Subcommittee, can render a real service by obtaining rate adjustments and faster car handling which will make the use of tank cars more economical. Achievement of lower tank car rates should alleviate to a considerable extent increased costs to consumers because of using the higher cost tank car transportation during the emergency, a subject in which the Office of Price Administration is vitally interested, as well as this office.

"It is to be hoped that the railroads will co-operate in this move as a proper contribution on their part to the relief of the present situation. Until this is done, however, there is no reason why the oil industry should not use any and all equipment that may be available, recognizing the urgency of getting supplies to the Atlantic Coast regardless of cost."

Canada May Pool All Oil Supplies

(*Continued from page* 5)

job of pooling and allocating supplies.

Members Listed

Committee members for eastern Canada are:

G. Harrison Smith, president, Imperial Oil Ltd.

J. A. Wales, president McColl-Frontenac Oil Co. Ltd.

A. L. Ellsworth, president, British-American Oil Co., Ltd.

P. M. Fowlie, president, Shell Oil Co. of Canada.

John Irwin, president, Canadian Oil Co.

R. Rosefield, president, Good Rich Refining Co., Ltd.

J. J. Schafer, managing director, Sun Oil Co., Ltd.

For western Canada:

R. J. Kenmuir, vice-president, Union Oil Co. of Canada, Ltd.

R. M. Pidgeon, division manafer, Imperial Oil Ltd.

C. E. Anstie, vice-president, Shell Oil Co. of B. C.

S. E. Nord, vice-president, Standard Oil of British Columbia, Ltd.

E. H. Teagle, manager, Home Oil Distributors, Ltd.

'Gas' Grades Fixed

Meanwhile, Canadian refiners and distributors are preparing for necessary adjustments as result of the oil controller's Order 008 which restricts gasoline sold to motor vehicles to 2 grades, effective Oct. 1.

This order, which followed closely on heels of Canada's motor fuel delivery curtailment Order 007 (see NPN Aug. 27, p. 7), states "no motor vehicle shall be operated in Canada by means of any motor fuel other than graded motor fuel", limited to 75-78 oct. and 66 to 70 oct., determined by A.S.T.M. method D-357-40.

Heavy Tank Trucks Given A-3 Priority

NPN News Bureau

WASHINGTON, Sept. 2. — Tank trucks of 3 tons and over may be built in unlimited quantities, but construction of oil transports and smaller tank trucks will be restricted to the present rate of production.

Such, reports the Office of Production Management, is the effect of its new priority order granting truck builders an A-3 rating to secure strategic materials. No limit is placed on the production of replacement parts, bodies or cabs for tank trucks or transports.

Object of the priorities order is to stimulate production of heavy trucks, OPM explained, adding that indications point to the building of 1,189,000 trucks during the current year—approximately 200,000 more than the output for the model year which ended July 31. Diversion of essential materials to heavier trucks will make the supply of such materials even tighter for light trucks and passenger cars.

Truck Priority Details

Details of the A-3 truck priority order as outlined by OPM follow:

Heavy trucks (3 tons and over): No limitation will be placed on the production of heavy trucks, and a producer of these trucks may use the A-3 rating to obtain such material as he can absorb in his production facilities.

Medium trucks (1½ tons and over): A producer of medium trucks may use the rating to get material for defense orders and also to fill civilian orders during the 3 months' period Sept. 1-Nov. 30 at the rate of one-half his production during the first half of the year. This means, in effect, that the producer may manufacture all defense trucks necessary and may continue to produce civilian trucks at same rate as he did during the first half of 1941.

Truck trailers (5 tons and over): Producers of truck trailers may also use the A-3 rating for all defense work and for continued production of trailers at the going rate during the first half of the year.

Public passenger carriers (motor and electric coaches with not less than 15 seats): Producers of these carriers may also use the rating to produce all defense orders and to produce civilian carriers at the going rate during the first half of the year.

Replacement parts: No limitation is placed on the production of replacement parts.

Bodies: No limitation is placed on the production of bodies or cabs for the heavy or medium trucks, truck trailers or passenger carriers.

SPAB's Position Explained In Oil's Priorities Set-Up

NPN News Bureau

WASHINGTON, Sept. 2.— Centering of power to make the big policy decisions on oil priorities and gasoline rationing in the hands of the 7-man priorities board headed by Vice-President Wallace, is according to an Office of Production Management official spokesman, the only change so far resulting from President Roosevelt's executive order of last week creating the Supplies Priority and Allocation Board.

Heretofore, oil priorities policy has been officially vested in the OPM council, spokesman said. Official policy-making on civilian rationing, including gasoline, was handled by OPACS Administrator Leon Henderson.

PCO Gets Applications

Thus Petroleum Co-ordinator's Office will continue to handle priority applications from the oil industry and OPM will continue to accept PCO's recommendations on routine matters as contrasted to those of a major character, spokesman said. Granting of a priority on steel for the proposed East Texas to New York-Philadelphia crude pipeline, for example, would be a major question that undoubtedly would be decided by the SPAB, he stated.

James E. Hughes, OPM, and J. E. Ellender, OPACS, who have been at the Interior Department working on oil priorities will remain there for a while, spokesman said, adding, however, that no determination had been made as yet on a permanent set-up.

Other members of the new priorities board, in addition to Vice-President Wallace, are: Secretary of War Stimson, Navy Secretary Knox, OPM Directors Knudsen and Hillman, Lease-Lend Administrator Hopkins, and Price Administrator Henderson.

September's Gasoline Supply On East Coast Curtailed 15%

NPN News Bureau

WASHINGTON, Sept. 2.—Because commercial, agricultural and emergency needs for gasoline will be met in full, during September, deliveries to private motorists will be cut to 85% of July's allotment, Acting Petroleum Co-ordinator Davies announced today. Deliveries to commercial users, however, will continue on a 100% basis.

At same time, Mr. Davies announced that gasoline stocks along Atlantic Seaboard dropped 1,204,000 bbls. during the 2 weeks ending Aug. 23. Although demand is 11% greater now, gasoline stocks are 1,211,000 bbls. below last year's level, Mr. Davies said.

Announcement from Petroleum Co-ordinator's Office stated: "Total gasoline deliveries to all customers in the 17 Atlantic Coast states and the District of Columbia during September will be 10% under the July level . . . Commercial, agricultural and emergency needs will be met in full, which will result in a reduction in deliveries to private motorists equal to 15% of the quantity delivered to them in July."

In Compliance With OPACS

Mr. Davies said that this curtailment by suppliers was in compliance with the civilian allocation order issued Aug. 16 by Office of Price Administration and Civilian Supply.

With September's gasoline demand estimated at 667,000 bbls. daily, a 10% reduction in deliveries should reduce consumption to 600,000 bbls. a day, the same as was consumed in September 1940.

Suppliers must notify each filling station at once of September quota and spread deliveries proportionately throughout the month. It was pointed out that station sales of gasoline should be spaced out so that some is sold every day in September.

Dealers To Judge

When station operators are informed by their suppliers as to amount they will receive, these operators "should calculate and arrange to supply during all of September, the minimum necessary requirements of the preferred users of gasoline listed in the August 16 order of the Office of Price Administration and Civilian Supply."

Mr. Davies said that preference must be given to motor fuel deliveries for following purposes:

1. The operation of commercial vehicles so classified by law.

2. The operation of vehicles necessary for the public health or safety, including ambulances and vehicles operated by physicians.

3. The operation of farm machinery and motor trucks used for farm purposes.

4. The operation of vehicles owned or operated by Federal, State, or local governments.

Need 'Gasoline Protection'

With co-operation of motorists, in using 15% less gasoline, Mr. Davies said this would be major contribution toward getting more fuel oil to East Coast for use this winter.

"We must protect our reserve supply of gasoline now, so that we will have a supply on hand when winter approaches and fuel oil shipments to the East Coast must be increased," Mr. Davies said. "We have no tankers in reserve to carry this extra load, so many of the tankers which now are carrying gasoline soon must begin carrying heating oils."

Robinson Joins PCO

WASHINGTON, Sept. 3.—P. M. Robinson, former assistant in oil section of Office of Production Management, has been transferred and now is working with refining division in Petroleum Co-ordinator's Office.

Set New Mexico Quota

TULSA, Sept. 2. — New Mexico's September crude production allowable has been set at 113,200 bbls. daily, same as Bureau of Mines' demand forecast and 300 bbls. above August allowable.

A 1585-bbl. per day increase in Arkansas' allowed production for September, to 76,013 bbls., has been ordered by Arkansas Oil & Gas Commission.

Expect A-10 Priority Rating

WASHINGTON, Sept. 2.—Announcement of an A-10 priority rating for petroleum refining and maintenance and repair is expected this week from the Office of Production Management.

East Coast 'Gas' Stocks Reverse Downward Trend

NEW YORK, Sept. 3 — Reversing their downward trend of past 2 weeks, East Coast gasoline stocks about-faced in week ended Aug. 30 to advance 167,000 bbls., according to American Petroleum Institute report today. Stocks stood at 20,261.000 bbls. at end of week —1,515,000 bbls. below stocks on comparable date in 1940.

During same week, gas oil and distillate stocks on East Coast advanced 370,000 bbls. to 15,266,000 bbls. on Aug. 30, but were 1,587,000 bbls. below last year. Residual fuel stocks also increased, from 8,791,000 to 9,127,000 bbls., still 2,709,000 bbls. short of 1940's stocks on comparable date.

Barometer of East Coast Refinery Operations

East Coast Refinery Runs and Stocks

(From API current weekly figures, representing 100% of refining capacity. Nearest comparable week in previous year is used. Figures in thousands of bbls.)

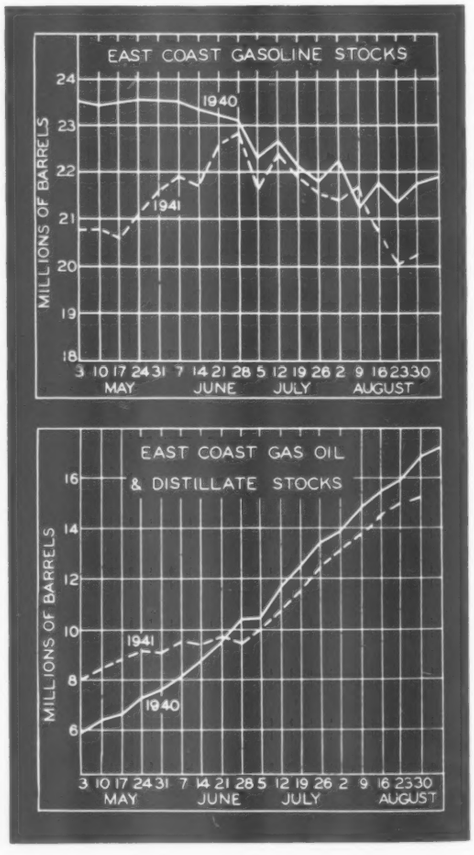
Week Ended	Daily Avg. Crude Runs to Stills 1941	1940	Gaso. Prod. at Refineries 1941	1940	Stocks Finished & Unfinished Gaso. 1941	1940	Stocks Gas Oil & Distillate 1941	1940	Stocks Residual Fuel Oil 1941	1940
May 3	611	535	1,651	1,469	20,787	23,615	8,004	5,975	8,717	7,948
May 10	593	576	1,610	1,270	20,810	23,429	8,515	6,351	8,562	8,771
May 17	570	590	1,628	1,333	20,587	23,487	8,879	6,598	8,156	8,752
May 24	603	573	1,584	1,321	21,157	23,618	9,122	7,218	8,467	8,115
May 31	574	585	1,635	1,463	21,657	23,603	9,060	7,615	8,012	8,646
June 7	600	577	1,708	1,411	21,965	23,588	9,548	8,036	8,578	8,953
June 14	558	590	1,603	1,456	21,705	23,357	9,405	8,745	8,109	8,551
June 21	587	606	1,487	1,669	22,620	23,206	9,725	9,526	8,450	8,844
June 28	600	561	1,645	1,492	22,888	23,043	9,421	10,401	8,240	8,842
July 5	602	532	1,672	1,382	21,698	22,286	10,035	10,521	7,911	9,654
July 12	644	560	1,733	1,439	22,364	22,671	10,835	11,775	8,262	10,270
July 19	570	558	1,642	1,535	21,932	22,054	11,511	12,460	8,775	10,365
July 26	593	563	1,600	1,496	21,555	21,846	12,389	13,415	8,972	10,460
Aug. 2	593	560	1,773	1,492	21,438	22,221	13,069	13,982	9,989	10,293
Aug. 9	610	577	1,642	1,540	21,686	21,317	13,782	14,739	9,638	10,865
Aug. 16	586	603	1,488	1,594	20,475*	21,848	14,433*	15,452	9,035*	11,044
Aug. 23	615	591	1,688	1,606	20,094	21,373	14,896	15,967	8,791	11,590
Aug. 30	644	600	1,654	1,530	20,261	21,776	15,266	16,855	9,127	11,833

Appalachian District Refinery Runs and Stocks

(From API current weekly figures, representing 91.0% of refining capacity; includes eastern half of Ohio. Nearest comparable week in previous year is used. Figures in thousands of bbls.)

Week Ended	Daily Avg. Crude Runs to Stills 1941	1940	Gaso. Prod. at Refineries 1941	1940	Stocks Finished & Unfinished Gaso. 1941	1940	Stocks Gas Oil & Distillate 1941	1940	Stocks Residual Fuel Oil 1941	1940
May 3	134	118	431	387	3,151	4,140	361	397	489	615
May 10	130	121	427	411	2,996	4,084	341	384	486	643
May 17	127	124	466	432	2,852	4,022	337	377	476	654
May 24	123	118	466	374	2,957	3,960	379	365	470	661
May 31	120	115	431	401	3,082	3,862	356	342	432	644
June 7	131	119	422	430	3,047	3,812	353	335	420	633
June 14	130	123	410	464	3,024	3,688	369	343	419	598
June 21	134	116	490	442	2,924	3,672	356	336	419	561
June 28	141	123	511	401	2,993	3,600	418	333	470	515
July 5	132	111	446	407	3,033	3,451	367	351	501	480
July 12	149	117	486	407	3,114	3,475	422	331	517	488
July 19	137	119	507	427	3,003	3,586	425	333	536	490
July 26	139	121	481	437	2,968	3,500	418	345	536	499
Aug. 2	137	115	458	403	3,091	3,459	461	411	505	461
Aug. 9	115	113	432	407	3,196	3,518	528	420	550	471
Aug. 16	123	121	426	456	2,993	3,428	578	447	557	491
Aug. 23	129	125	459	441	2,950	3,385	582	457	561	511
Aug. 30	133	131	437	481	3,070	3,320	533	457	634	531

*Revised to exclude shuttle or lease-lend material.



THE Editor's PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and publisher, Penton Building, Cleveland, O.

Loves All—but Station 'Labor'

"LABOR is worthy of its hire"—but not when it operates a gasoline filling station.

The first half of this statement was declaimed from many a rostrum throughout the country this Labor Day.

But while efforts of trade unions to get more money, even at the expense of delay in war defense work, continued this week with seeming more than frank approval of that part of Washington officialdom known as the New Deal, the New Deal's OPA, successor to "OPACS", used its every effort to lower retail prices, and thus shrink the margins, of retail and tank wagon gasoline prices at most places along the East Coast. This effort was frankly aimed to reduce the net income, or "hire", of the operators of service stations and even the owners of bulk plants.

While the New Deal was assisting "labor" to get more "hire", "OPA" Henderson sternly and vigorously condemned the "labor" at Philadelphia's service stations for trying to follow the Labor Day advice of the New Deal to all other labor.

At Philadelphia, "labor" at the filling stations this Labor Day was refusing to cut its "hire" by cutting its pay on the diminished quantity of gasoline it now is allowed to sell. Henderson threatened "further action" by "civic organizations" if this Philadelphia filling station "labor" did not accept forthwith his decree lowering their prices and shrinking their margins and net income.

NOWHERE else in the whole United States, either on Labor Day or at any other time in the past 8 years that we know of, has the New Deal decreed less money for "labor" and insisted that it take the cut and like it, except at the present time in the city of Brotherly Love.

Maybe the reason is that the gasoline station operators do not belong to either the CIO or the AF of L although both outfits have tried to "organize" them.

Could it be possible that the New Deal's "order" to the unorganized station operators is a word to the wise? If they hurry up and join an "accredited" union will the "wages" (margins) be raised?

It might seem to be a bit more than a coincidence that the only "labor" that got cracked down this Labor Day, as not "worthy of its hire" was the "unorganized" service station operators and owners of the East Coast.

What if the farmers ran these East Coast filling stations? Would our farm leaders of the New Deal refrain from cracking down on them for asking "parity prices"?

Will U. S. Run a Gasoline Pool?

THE threatened gasoline and oil shortage on the East Coast is due to two things,—

(a) a scarcity of the CHEAPEST KNOWN MEANS of oil transportation—by water (government seized the tankers) and

(b) the absolute refusal by the "economic planners" and exponents of a policy of scarcity, to permit as many as possible of the MORE EXPENSIVE means of oil transportation to be used. (The planners fixed a low ceiling on prices.)

For years, the car owners of the East Coast have been favored over the car owners of the central and northern parts of the country because of the oil industry's development of low-cost tankers and barges. So low is the cost of running tankers that it is cheaper to pipe crude oil from Texas fields down to the Gulf, load it on tankers there, sail around Florida and up the coast to Philadelphia and New York, refine it there and pump its products back to Pittsburgh, Cleveland and Buffalo than it is to pipe the oil across country by pipeline, or, up to the present time, than to tanker it to the Mississippi River, load it on barges and send it up the Mississippi to the Ohio River and to Pittsburgh, Youngstown, and Cleveland and by barge or tanker to Buffalo.

Now, the New Deal insists that the East Coast motorist must not pay more for his gasoline than if he got it by the low-cost tankers, even though the car owner has to walk this winter. And that the home owner shall not pay more than tanker cost for his heating oil, even though he freezes.

Is the New Deal aiming to turn this East Coast oil situation over to a WPA or a "lease-lend" agency or some other form of a government-operated gasoline pool?

Penalizes Jobbers Unequally

ONE never knows just which way a government regulation will cut.

Jobbers and other bulk plant operators in the East Coast area who today are receiving but 90% of their July receipts, are finding that the more commercial business — considered necessary under "war" time rules—they have, the less they can give to their regular but not so "essential" service station customers.

That is, necessary truckers and those businesses running their own delivery systems, get 100% of their needs, no matter what they are. These needs are now generally in excess of their July requirements.

After supplying these 100% customers the jobber finds that he has left a supply equal to much less than 90% of his passenger car customer requirements—maybe but 50%.

While the jobber with nothing but dealers and his own stations has the full 90% for these regular customers.

The aim of the Oil Co-ordinator is to cut passenger car consumption more than 10%, but this regulation penalizes some jobbers far more than others.

Call on the Nation's Trucks

WHILE OPA, late OPACS, is holding down East Coast prices so that petroleum products cannot be shipped in by other than tankers without heavy losses to the shipper, Deputy Oil Co-ordinator Davies is trying to get more tank cars and truck transports and barges into use.

Mr. Davies says he is having trouble locating the reported surplus of 17,000 to 20,000 tank cars. For some reason there does seem to be a lot of mystery about the tank car situation.

The tank car is probably the oil industry's least developed means of transportation. As pipelines were improved, both shippers and railroads seemed to forget about the tank car. Rail rates went higher, as pipeline costs went lower.

When trucks came, the entire oil industry seemed to turn its ingenuity toward speeding and perfecting their development. Major oil companies hired experts not only to study the routing and operation of trucks but to improve their design to oil industry requirements. Independent oil men experimented with long-distance hauling with the result that in some western states most of the Independent products move entirely by truck transport.

Maybe the tank car is a "do-do bird". But it would seem that with the great need for immediate increase in transportation facilities to the East Coast, the greatest possible use of all existing means, including tank cars, should be made. The East Coast needs petroleum

products this fall and winter and not next year by which time there should be new tankers and new pipelines galore, perhaps even a surplus of them.

IF Deputy Co-ordinator Davies cannot find the tank cars he needs and if he cannot speed them up, he might create a special truck transport committee to see about putting all tank trucks the country over on a 24-hour service basis and then putting the excess capacity into service hauling finished products between Mid-Western refineries at least to points a few miles west of the East Coast line. Perhaps a big fleet of trucks could take over the job of supplying a few tiers of counties for 50 or 100 or 200 or more miles east of the western boundaries of the East Coast states, thus leaving less territory for the tankers and pipelines to serve.

We, from 32 years of observation of this oil industry, have great faith in the ingenuity of oil men to meet every situation, providing they are given the opportunity and are left alone.

If the economic planners of scarcity at Washington do not want to approve the raising of prices in the East to cover the cost of this more expensive means of transportation, does not the oil industry owe a duty to its customers and to the public to go ahead with the truck plan anyway, and charge the prices that will keep at least some easterners from hoofing it to work this winter and sitting in cold homes?

It is these same easterners, relieved of their hardships, who will be the jury, either in court or at the bar of public opinion. They will have the final say as to the size of the "crime" in keeping their cars moving and their homes warm. It seems only fair that the prospective sufferers should be given the opportunity of saying what they want, rather than to leave their comfort and fate to the bureaucrats who killed the little pigs some years ago, in their "planned economy of scarcity".

Oil Conservation

Officials Discuss Oil Compact

CLEVELAND—Following are additional replies to questions raised in Editor Platt's Aug. 13 *editorial "Interstate Compact Offers Oil the Only Hope for True Democracy in Government Relations". For additional details, see NPN Aug.* 27, *p.* 16.

August 29th, 1941

Editor, NPN:

I appreciate your letter of August 16 enclosing reprint of your editorial on the Interstate Compact published in the National Petroleum News of August 13.

I have read the editorial with keen interest and commend you on the emphasis you place upon the importance of the Interstate Oil Compact as an agency for democratic cooperation with the oil industry.

I am deeply impressed with the possibilities which I believe exist for useful service by the Compact and it is my sincere hope that during the coming months the activities of the Compact Commission will be directed towards the realization of these possibilities. I firmly believe that through the adoption and active pursuance of a sound and constructive program, much can be accomplished in the field of conservation, and I further believe that conservation can and ought to be adequately accomplished by the industry under state regulation. In the present situation there is more urgent need than ever before for increased effort and accomplishment along this line. Of course it is essential to have the full support of industry and the State Regulatory Bodies to assure successful operation of the Compact. I am looking forward with confidence to such support and cooperation.

At the next meeting of the Compact which will be held the latter part of September, probably on the twenty-sixth and twenty-seventh, the Committee appointed by Governor Phillips, Chairman of the Compact Commission, to submit a proposed program of activities, will be ready to report. Much depends on the program adopted by the Commission. I am sure it is the desire of the participating states to go forward aggressively in the performance of the functions delegated to the Commission by the various state legislatures. I am a member of the committee referred to above, and pending the completion of its study and submission of the report, I think it advisable for me not to attempt to cover in this letter the details of what I think the Compact program for the coming year should be, however, you know, of course, that there are many phases of the oil problem with which the Compact is not authorized to deal.

Your editorial involves the possible enlargement of the functions of the Compact. Of course no enlargement is possible except by legislative action of the various states, plus approval of Congress. It is my belief that the possibilities of the Interstate Compact, as presently authorized, have by no means been fully developed and I think such development should be seriously undertaken during the coming year.

Sincerely yours,
(S) J. C. Hunter
Member, Interstate Oil Compact Commission

* * *

August 28, 1941

Editor, NPN:

I wish to thank you for your letter of August 16, enclosing therewith a reprint from the Petroleum News which refers to the functions of the Interstate Oil Compact Commission. I very much agree with the thoughts expressed in your editorial, and I am very hopeful that the present control of the oil industry, now being exercised in Washington, will be only for the duration of the present emergency. I am very much afraid, however, some effort at permanent control of the industry will be made, either by the executive branch of our government or by Congress itself.

I feel that the regulatory authorities in the various oil-producing States know their own problems better than any Washington Bureau, and that each State should take care of their own problems, rather than through centralized control in Washington.

With best regards

Cordially yours,
(S) B. A. Hardey
Chairman Louisiana Mineral Board

* * *

August 25, 1941

Editor, NPN:

I received your letter of August 16 and read your editorial concerning the Interstate Oil Compact with much interest. I think your editorial was a very fair and able presentation of the subject. You are absolutely right in your statement that the President should at least have done the Interstate Compact Commission the courtesy of discussing the present situation with them. I was very much interested in the last paragraph of your editorial in which in effect you called upon the members of the Interstate Oil Compact Commission to arise to their opportunity for democratic service. I have long been a believer that the Commission should step forward and greatly expand its usefulness.

Sincerely,
(S) Warwick M. Downing
Member Interstate Oil Compact

* * *

August 31, 1941

Editor, NPN

I certainly agree with your editorial to the effect that the Interstate Compact offers oil true democratic government. It has always pointed the way. The only thing that was required was enough publicity.

The only danger now will be zeal to put force behind it. Force will ruin the Compact. "Education is the only dictator that free men acknowledge." Therefore let us educate the industry and the oil states on the efficacy of getting together under the Compact and sticking together by force of reason and common sense.

Sincerely yours,
(S) Ernest O. Thompson
Chairman,
Texas Railroad Commission

PCO Men to Speak At NPA Meeting

CLEVELAND, Sept. 2 — Wright W. Gary and H. A. Gilbert, directors of refining and transportation, respectively, in the Petroleum Co-ordinator's Office, will address group meetings at National Petroleum Assn.'s 39th annual meeting, Sept. 17, 18 and 19, in Hotel Traymore, Atlantic City, N. J.

Highlight of general session will be address by Petroleum Co-ordinator Ickes, although Mr. Ickes may be unable to keep this engagement in which event Deputy Petroleum Co-ordinator Ralph K. Davies will speak.

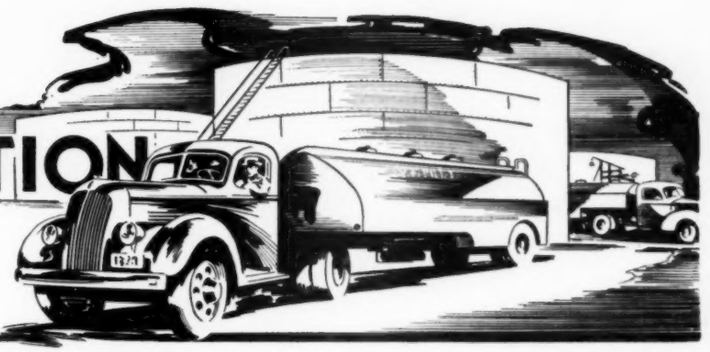
Dr. Gustav Egloff, Universal Oil Products Co., is scheduled to discuss national defense chemicals from petroleum.

Association Changes Name

NPN News Bureau

CLEVELAND, Aug. 30. — North Carolina Independent Oil Jobbers Assn., at its recent convention, changed its name to "North Carolina Oil Jobbers Assn.," according to announcement by W. A. Parker, secretary. Policies of the association remain the same and only jobbers who are independents are eligible for membership, Mr. Parker stated.

OIL TRANSPORTATION



Asks Heavy Oil Rate For Small Tank Cars

NPN News Bureau

TULSA, Sept. 2.—To enable the shipment of heavy oils in 8,000-gal. tank cars without discrimination, Southwestern Freight Bureau has proposed to establish rates on tank car shipments with minimum weight of 60,000 lbs., based on 115% of rates now in effect on crude and other heavy products taking the 7.4 lbs. per gal. estimated weight and subject to minimum weight of 74,000 lbs. The proposal would affect all heavy oil shipments within S. W. F. B. territory, which includes southwestern producing and refining points.

Text of proposal follows:

"It is proposed to establish rates based 115% of rates which at present are subject to minimum weight of 74,000 lbs. and to apply in connection therewith, minimum weight of 60,000 lbs. computed on the basis of 7.4 lbs. per gal. The rule for disposition of fractions will be to drop all less than 0.24, count as 0.5c all from 0.25 to 0.74 and count as 1c 0.75c and greater. Proposed rates to be subject to provision that the per car charge will not exceed the present per car charges based on the present rate and minimum weight of 74,000 lbs."

Mississippi-East Coast Rail Cut Proposed

NPN News Bureau

TULSA, Sept. 2.—Mississippi's oil reserves may be drawn upon to supply crude to the East Coast as result of government requisitioning coastwise tankers. Efforts are now being made to add Mississippi to the already growing list of southwestern producing areas from which east coast refiners may obtain raw supplies. This state is already supplying Illinois refineries with crude and now a 96c per bbl. rate is proposed to enable movements of Mississippi oil to Marcus Hook, Pa., via rail.

The 96c per bbl. rate applies to carload shipments of 10,000-gal. capacity, with shipments in 8,000-gal. cars taking a proposed $1.05 per bbl. rate.

Southwestern Freight Bureau has this proposal in its hopper. Output of Mississippi oil wells is not prorated, with production averaging almost 50,000 bbls. daily.

Reconsider Rail Rate Cut

TULSA, Sept. 3.—Trans-Continental Freight Bureau has agreed to reconsider a proposal for 1.65 to 3.168c per gal. reductions in "casinghead gasoline" rail rates from Borger, Tex., to California seaports. The proposal calls for a 5.082c per gal. rate from Borger to Long Beach and Los Angeles, Calif., and would apply to shipments of aviation gasoline for export to Russia or China.

Oil Equipment Rail Rates Cut 25% in Texas

Special to NPN

DALLAS, Sept. 2.—Reductions averaging 25% in rail rates on used oil well drilling equipment shipped within Texas went into effect Aug. 30 under order of the Texas Railroad Commission. The order calling for reductions of as much as 44% on some hauls is an answer to petition by Texas Mid-Continent Oil & Gas Assn. for rates which would enable the Texas oil industry to use rails for moving drilling rigs and equipment.

Under the new rates, a drilling contractor may save as much as $1200 on each drilling outfit shipped a distance of 400 miles, as compared with previous rail rates. Estimates indicated about 95% of present oil field hauling has been by trucks.

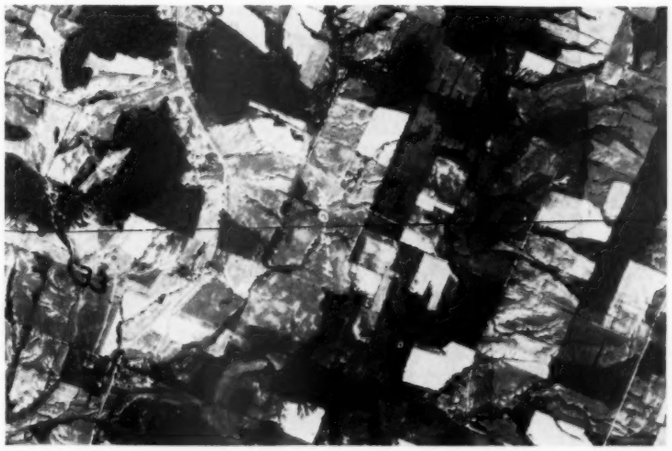
Provision is also made in the order that new rates will affect mixed carload shipments.

Consider New Crude Rail Rate

TULSA, Sept. 3.—Rails have suggested and Southern Freight Assn. is considering a 52.8c per bbl. rate on crude moved by rail from Pickens, Ragin, Tinsley, Valley, Vaughn and Yazoo City, Miss., to Hartford, Ill.

S. F. A. has authorized a 52.8c per bbl. rate on Mississippi crude moving to Covington and Louisville, Ky. Rails are expected to put new rates into effect as soon as tariffs can be published and necessary notice given.

Birds-eye View of Defense Pipeline Route



After studying more than 1250 feet of aerial maps such as the one reproduced here, officials of the big national defense crude line have already plotted the exact route of the line that will extend from East Texas through Illinois and on to the East Coast. Stereoscopic lenses reveal the most logical route for the line, indicating cleared spaces available for supply bases, obstacles that must be skirted and what may be expected of the pipeliners at river crossings

Tanker Control Board Has Davies as Head

NPN News Bureau

WASHINGTON, Sept. 2.—To co-ordinate tanker facilities, formation of a Tanker Control Board was announced jointly this past week by Petroleum Co-ordinator's Office and U. S. Maritime Commission.

Duty of this board "shall be to co-ordinate all effort on the allocation and utilization of tankers owned or controlled by American companies."

Board members are: Deputy Petroleum Co-ordinator Ralph K. Davies, chairman; M. W. Bowen, assistant director, Division of Emergency Shipping, U. S. Maritime Commission, vice-chairman; Commander W. M. Callaghan, U. S. Navy Department; E. Holman, representing petroleum industry in District 1; J. R. Parten, District, 3, and L. E. Fleming, District 5.

Lower Crude Rail Rate Proposed to Chicago

NPN News Bureau

TULSA, Sept. 2.—New rail rate for crude shipped by rail from southwestern producing points to Chicago are proposed in Southwestern Freight Bureau proposal 25552. A 68c per bbl. rate on crude and refinery cracking stock (not exceeding 38° gravity) shipped to Chicago in either 8,000-gal. or 10,000-gal. capacity tank cars, is proposed from Missouri River points.

From Coffeyville and Wichita, Kans., and Tulsa and Oklahoma City, new rate of 75c is proposed.

Authorize 2 Recycling Plants For East Texas Area

TULSA, Sept. 2. — Two new recycling plants for East Texas were indicated today when Texas Railroad Commission authorized Shell Oil Co. to construct a plant in the Chapel Hill field of Smith County and Lone Star Gasoline Co. to operate a plant in the Willow Springs field of Gregg County.

Commission is considering application of American Liberty Oil Co. to build a plant in the Blessing field of Matagorda County.

U. S. Army May Use All-Purpose Lubes

NPN News Bureau

WASHINGTON, Sept. 2. — Use by Army of all-purpose lubricating oils in diesel-engined tanks is contemplated in proposed specifications drafted by the War Department this past week. Specifications call for use of Grade 30 in summer and Grade 10 in winter.

Grade 30 must pass engine tests described as Caterpillar Tests Nos. 1 or 1A, 2 and 3 in the "Diesel Lubricant Test Manual" issued by the Caterpillar Tractor Co. of the latest date approved by the War Department. Grade 10 must pass tests Nos. 1 or 1A, 2 and 4 contained in this manual.

Grades 30 and 10 also must pass the test described as "Test Procedure for 500-Hour Lubricating Oil Test" as issued by General Motors Corp., Detroit diesel engine division, and of the latest date approved by the War Department.

Benzine Award Goes To Taylor Refining

NPN News Bureau

WASHINGTON, Sept. 2. — U. S. lease-lend award for 100,000 bbls. of distillation benzine went to Taylor Refining Co., for bid of $2.73 per bbl., with lifting F.A.S. Corpus Christi. Schedule number was LL-900-6054. Next lowest bidder was Maritime with $2.94 per bbl., F.A.S. Houston.

G.C.R.A. Reports 'Gas' Stocks Down

HOUSTON, Sept. 2.—Gulf Coast Refiners Assn. membership decreased aviation and motor gasoline stocks and doubled naphtha stocks the first half of August. Inventories include reports of two new members, Eastern States Refining Co. and Amsco Refining Co.

Aviation gasoline stocks on hand Aug. 15 totaled 317,609 bbls., down 76,185; motor fuel 1,143,473 bbls., down 288,572; naphtha 282,566 bbls., up 190,933. Daily average crude runs to stills were up 5673 bbls. to 100,710 bbls., or 63.6% of rated capacity of total 150,500 bbls. Last half July crude runs were at rate of 67.2% capacity of 123,500 bbls.

Diesel gas oil stocks were 870,656 bbls., up 713,217; diesel fuel, 22,261 bbls., up 10,977; No. 5 fuel, 248,253 bbls., up 178,276; Bunker "C" fuel, 628,879 bbls., down 114,679 since first of August.

Penn Grade Requests Goforth Retraction

CLEVELAND, Sept. 2.—W. A. Goforth, Tulsa, president of Oklahoma Stripper Well Association, has been asked to retract his statement that certain Oklahoma oil fields "contribute largely to supplying the demand for 100% Pennsylvania lubes."

Request for retraction was asked by J. E. Moorhead, executive manager of Pennsylvania Grade Crude Oil Association, in a letter to Mr. Goforth in which the Penn Grade official declared the statement was "completely untrue".

Complete text of Mr. Moorhead's letter to Mr. Goforth, follows:

Mr. W. A. Goforth, President
Oklahoma Stripper Wells Assn.
Tulsa, Oklahoma

Dear Sir:

My attention has been called to a statement credited to you in National Petroleum News, page 12, issue of August 20, 1941 in which you are quoted as saying that "it is no trade secret that much of the crude oil from which this Grade A (meaning Pennsylvania) lubricating oil is made is produced here in our own state" and to the effect that Burbank, Oklahoma City and Seminole fields contribute largely to supplying the demand for 100% Pennsylvania lubes."

The statement, is completely untrue and is libelous.

This letter is written for the purpose of giving you an opportunity to disavow the statement, retract it or publicly admit that it was based upon rumor of which, so far as you know, there is no foundation in fact.

Very truly yours,
Pennsylvania Grade Crude Oil Assn.
J. E. Moorhead,
Executive Manager.

In printing Mr. Goforth's statement arguing for higher Oklahoma crude prices, NPN of course in no way endorsed what was said in the statement. Nor did NPN have any intent of disparaging Pennsylvania Grade oil. NPN often prints arguments and statements of oil men and others as a matter of information and without subscribing to them.—EDITOR.

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Senate Group Hears Davies Discuss East's Oil Shortage

NPN News Bureau

WASHINGTON, Aug. 30.—Stock figures show "there is a shortage of petroleum products on the East Coast," according to testimony by Acting Petroleum Co-ordinator Davies at opening day of hearings, Aug. 28, before Senate oil shortage investigating committee. As to the controversy over "shortage" data, Mr. Davies said he wondered if the confusion was not caused by some "sinister" plan to sabotage defense industries through lack of oil. Sen. Francis Maloney (Dem.), Conn., presided at hearings, which resume Sept. 3.

Other background data on East Coast situation, developed through testimony by Mr. Davies and his staff, included:

1. September plan to reduce gasoline consumption 15% (see story on page 10).
2. Oil shortage along East Coast may be over by spring—at which time pipeline construction is expected to be completed.
3. A 10-day gasoline supply along East Coast is normal.
4. Possibility of fuel oil curtailment.
5. Statement that Petroleum Co-ordinator's Office has no legal authority to impose a gasoline rationing plan.
6. Efforts of PSO to reduce consumption of petroleum products on East Coast.
7. Information about tankers, pipelines, tank cars, tank trucks and concrete barges (see separate story on page 17.)
8. Accomplishments of various oil companies along conservation lines (see story on page 34).
9. Organization and general function of PCO.

Davies Opens Hearings

Greater percentage of above information was furnished the Senate investigating committee by Mr. Davies, speaking for Petroleum Co-ordinator Ickes, who is vacationing in the West.

Mr. Davies opened the first day's session with a 51-page statement which was supplemented throughout the day with additional information by PCO's staff in answer to committee members' questions.

Senate's committee members, in addition to Chairman Maloney are: Senators Radcliff (D), Maryland; O'Daniel (D), Texas; Barbour (R), New Jersey, and Burton (R), Ohio.

See box at bottom of this column for East Coast stock figures. Explanation on shortages as taken from Mr. Davies' statement follows:

Davies Explains Shortage

Year-end gasoline stocks would be about 4,000,000 bbls. below normal, as applied to principal products, Mr. Davies said; light heating oils about 3,000,000 bbls. below "necessary level"; while industrial fuel oils would be exhausted before end of 1941.

"It must be remembered," Mr. Davies continued, "that winter's fuel oil stocks along the East Coast are built up during summer months. From April to August, in 1940, fuel oil stocks in this area were increased by 20,000,000 bbls., while the increase this year will be only about 9,000,000 bbls., although demand will be up 18,000,000 bbls. during last 4 months of 1941."

To provide adequate supplies of heating oils for domestic use and heavy fuels for the Navy, defense and civilian industry, Mr. Davies said that both PCO and Office of Price Administration and Civilian Supply had acted to curtail gasoline consumption.

Acting Co-ordinator Davies . . . discusses East Coast shortage before Senate oil investigating committee

Additional Burdens Cited

Citing the tanker deficit as the reason for curtailment, the PCO spokesman said that there were 2 additional burdens: 1. Heating oil and heavy fuel demand has increased this year.

2. Reserve stocks are less than last year.

Mr. Davies' figures follow:

"Last year the demand for light heating oils from September to December was 31,600,000 bbls. This year the demand for such oils will total 33,700,000 bbls. or 2,100,000 bbls. more. Last year at this time, there were in storage 16,366,000 bbls. and today there are in storage 15,478,000 bbls.

Industrial Demand Up

"In the same manner, the demand for industrial heating oils has increased. The Bureau of Mines estimates an industrial fuel oil demand of 58,600,000 bbls. from September to December, an increase of 8,600,000 bbls., or 17%, over last year. But, in the face of this increased demand, our present stocks of these industrial fuel oils are 3,229,000 bbls. less than they were at this time last year. A continuation of the present trend indicates that the entire East Coast stocks of industrial fuel oils will be used up before the close of the year. That is the trend, but it is a trend which must be halted. Essential defense industries require this oil and it must be brought to them."

Rounding out the statistical picture, Mr. Davies said that gasoline transportation had been "taking a disproportionately large share of the available tankers which ought to have been moving fuel oils to supply next winter's requirements." In the face of an 8% gasoline demand increase during balance of year, gasoline stocks are lower by 1,211,000 bbls. than at this time last year, he said.

Cites 3 Dangers

Citing danger of not bringing supply and demand into balance, Mr. Davies said that East Coast could expect 1 of following results or combination of all 3:

"1. We could have all the gasoline we want and not enough oil to heat our homes—

"2. We could heat our homes and have all the gasoline we want, but industry would be paralyzed for want of fuel oil—

"3. We could have ample oil for running our industries, but not heat for our homes and gasoline for transportation."

Mr. Davies concluded that a proper ratio between the various petroleum products must be maintained.

Not Enough Tankers

Emphasizing the lack of sufficient tankers, this oil man told committee that during July the Navy called for bids on 2,500,000 bbls. of heavy fuel oil, but that none were submitted because no oil company could transport the oil unless the Navy would carry it in its own tankers from the Gulf Coast. Mr. Davies said: "There were not enough private tankers to deliver oil to the U. S. Navy which is expected to guard our shores, because those tankers were too busy carrying gasoline to motorists in the East."

PCO has continually given warnings of this shortage, Mr. Davies said, later adding: "One cannot but wonder if there does not lie behind these efforts to promote confusion and create dissension, some purpose, sinister and planned. Is it possible that we have here an attempt at sabotage? No more vital effort than the supply of oil could be selected for interference by forces antagonistic to national defense."

10 Days' Supply 'Normal'

Speaking of the PCO's "10-days' supply" figure for gasoline along the East Coast and the manner in which the newspa-

Davies Accounts for East Coast Stocks

	Barrels
1. The Bureau of Mines estimates that the Atlantic Coast demand for petroleum products during the last four months of 1941 totals	199,900,000
The anticipated receipts are	172,100,000
This leaves a deficit of	27,800,000
2. There is a reserve supply of oil in storage of	72,600,000
This is less than the reserve on hand at the end of August, 1940, by	9,000,000
3. If the deficit of 27,800,000 bbls. was to be met solely by withdrawing oil from the reserve supply, stocks on hand at the end of the year would be about	44,800,000
4. Stocks on hand at the end of last year were	72,620,000
5. This would mean that stocks then would be at irreducible working levels with no reserves.	

pers sensationalized this, Mr. Davies said that PCO "indicated no such result." Senator Burton asked if East Coast didn't usually have only a 10 days' supply of gasoline, and Mr. Davies answered "yes".

After explaining the set-up of PCO, including the reading of President Roosevelt's letter to Secretary Ickes, designating the latter as Petroleum Co-ordinator, Mr. Davies said that the President had also asked the Petroleum Co-ordinator "to undertake the task of co-ordinating the oil activities of the various departments and agencies of the Federal Government to develop ways and means for furthering national petroleum defense policy." A portion of these agencies include State, War, Navy, Treasury, Justice and Commerce Departments, Maritime Commission, Office of Production Management, Office of Price Administration and Civilian Supply, Co-ordinator of Commercial and Cultural Relations with the South American Republics, the Army and Navy Munitions Board, Reconstruction Finance Corporation and others. Mr. Davies stated that this had been accomplished and that smooth operations were now in force.

Reviews Tanker Situation

Reviewing outlook on tankers, the PCO spokesman told the Senate committee about the numerous accomplishments and recommendations made to reduce unnecessary hauling, to save time and to assure delivery of petroleum products along the East Coast as well as in Latin American republics.

Explaining steps taken by PCO in the Caribbean area, Mr. Davies said: "To increase still further tanker efficiency in Caribbean shipments, the Co-ordinator recommended that these companies arrange for exchange and loan of products to prevent unnecessary stops and duplication of services. In concrete terms, this recommendation (No. 9, see Aug. 27 NPN, page 11), cuts tanker space formerly required to supply the Caribbean demand by more than one-half. Each tanker supplying petroleum and petroleum products to the Caribbean area can now furnish a larger volume of petroleum products in the same length of time than could 2 tankers formerly engaged in the same trade."

Questioning from Senator Burton brought answer by Mr. Davies that about 1,000,000 additional barrels would be supplied to East Coast due to this Caribbean recommendation.

Sees 5 Tankers Per Month

Further questioning about tankers caused Mr. Davies to ask PCO's Research Director Edward B. Swanson about the situation. Mr. Swanson said that by January, 5 tankers per month will be completed.

Due to tanker shortage, Pacific Coast will be asked, shortly, to conserve gasoline on same basis as East Coast, Mr. Davies said. He declined to say what PCO would do about national conservation of gasoline but indicated that such a proposal would be fair.

(For a more detailed discussion of the tanker situation, see story at end of this article on second day's session of the committee.—Editor.)

Shortage 'Over by Spring'

During Mr. Davies' discussion of pipelines, Senator Burton asked if East Coast shortage would be over with completion of pipelines now under or about to start construction. Mr. Davies said:

"My guess would be that with completion of proposed lines and without further tanker shortage, that the shortage (of oil along East Coast) should be over by spring."

Pipelines either under construction or being planned, were listed by Mr. Davies as follows:

1. The 1800-mile crude line from East Texas to Marcus Hook and Bayonne, N. J. This would carry 250,000 bbls. of oil daily to East.

2. Plantation line from Baton Rouge, La., to Greensboro, N. C. It was revealed that this line may be extended from Greensboro to tidewater at either Norfolk or Hampton Roads. If this is approved and completed, it would mean an additional 250 miles at an estimated cost of $3,500,000. Job could be completed around first of year, Mr. Davies said, and would further relieve tanker shortage.

3. Portland, Me. to Montreal line. Operation at 50% of its capacity is expected by November. When in full use, more tankers will be released.

4. Southeastern line. Except for 17 miles of construction, waiting rights of eminent domain, this line is completed. PCO is preparing a recommendation to President requesting necessary rights-of-way, Mr. Davies said. This line is 475 miles long, running from Port St. Joe, Fla., to Chattanooga, Tenn., by way of Albany, Macon and Atlanta. Only 2 months will be required to finish this line and make possible the release of more tankers.

Asking Mr. Davies if the oil industry would return to tanker transportation after the present emergency, in view of fact that this is cheaper form of transportation, Senator Burton asked what would become of the proposed 1800-mile crude line?

This remains to be seen, Mr. Davies stated, adding that it depended, to some extent upon charter rates and number of tankers available after the war. He also saw possibility of this crude line being changed to a products line or of line being converted for natural gas. There is also possibility, the PCO spokesman said, of government retaining this pipeline as a national defense line.

Tank Car Capacity

Speaking about tank cars, Mr. Davies said: "I am in no position to give assurance that the tank car capacity of the country is being utilized to capacity. I suspect that it is not, and that greater accomplishment is possible in that direction. In fact, our forecasts of stock position contemplate an improved employment of tank car facilities. However,

Senate Group Convenes to Probe East Coast Oil Supply

MALONEY PETROLEUM INVESTIGATING COMMITTEE opens its first session with a 51-page statement by Acting Petroleum Co-ordinator Ralph K. Davies. Committee members at right are, from left to right, Senators O'Daniel, Texas; Maloney, Conn.; Barbour, N. J., and Burton, Ohio. Mr. Davies is in left foreground. Some members of Petroleum Co-ordinator's Office are seated in the background. With backs to the camera are PCO's Chief Counsel J. Howard Marshall and Director of Research Edward B. Swanson. Senator Radcliff, fifth member of investigating committee, was absent during the morning session

I am in a position to assure you that the opportunities have not been overlooked."

Senator Burton questioned the necessity of spending $100,000,000 for proposed pipelines to East Coast if sufficient tank cars could be found. Mr. Davies answered that "it would be ideal but industry does not believe it possible."

Sees Nothing Definite

Senator Maloney said that it seemed to him nothing very definite had been done regarding the tank car situation and asked Mr. Davies if he knew of any instances where petroleum industry has been denied tank cars. The senator also inquired if oil industry had applied to Interstate Commerce Commission for reduced rates. Mr. Davies replied that application to ICC had been made and that PCO was striving to straighten out the tank car situation.

Reviewing what PCO has done to date regarding tank cars, Mr. Davies said: "In order that we might have a check upon performance actually attained by the companies, we have taken steps to ascertain through the office of Mr. Ralph Budd, Commissioner, Division of Transportation, Office for Emergency Management, what idle tank cars are in fact available. Some 2 months ago, I discussed this problem with Mr. Budd and concurred with him in a plan under which his organization would undertake to survey this situation as well as promote greater efficiency in the handling of tank car facilities. A week ago, pursuant to this arrangement, Mr. Budd's organization rendered a report which on its face indicated some 18,000 tank cars "available" as of August 20. I find, however, that this figure was arrived at by a mathematical computation which assumed a certain standard of performance as possible for all cars, and relating this to the total number of cars in existence and the volumes moving, led to the conclusion I have mentioned.

18,000 Surplus 'Theoretical'

"Now 'available' equipment as determined in this manner is something totally different than idle equipment, in the ordinary sense. The 18,000 is a highly theoretical figure. What performance may properly be expected of a tank car in operation is a proposition upon which even experts may well differ. To say the least, a figure of surplus that is determined in that manner is controversial and cannot be used for the practical operating purpose which we have in mind. The oil companies have indicated their willingness to co-operate in putting idle tank cars to work, and in our check to see that this is actually done we must be practical and specific. In short, we must be able to say if idle equipment exists, where it is and in what quantity. We hope yet to receive through Mr. Budd's organization actual figures on the number of cars not being used, and their location. This is the sort of definite information I have continually invited the railroads to supply in support of their generalities, and their failure to produce it is difficult for me to understand."

Reviews Barge Situation

Discussing use of barges to move petroleum products, Mr. Davies said that his reports indicate all barges are now in use and that "future relief that can be afforded by this means of transportation lies mainly in the construction of still more barges. With this in mind, at the present moment, this office has under consideration proposals for the building of additional barges for utilization in this service. Moreover, we are trying to arrange it so that several barge companies operating on the upper Mississippi will move barges and tug power down stream before winter sets in, thus assuring the availability of this capacity to move products up the Ohio into the Pittsburgh area."

Speaking about the need for curtailing gasoline consumption and the possibility of some form of rationing system, Mr. Davies said that if more rigid means prove necessary, that PCO is prepared and that a study of rationing systems throughout the world is being made. "However, this preparation should not be regarded as a move toward rationing, as I am confident that the public can and should support the present plan and thus make unnecessary the adoption of a more complicated, cumbersome and expensive system of curtailment."

Need 'Maximum Yield'

Touching on the country's refining capacity, Mr. Davies said that maximum yields must be maintained. "The most important product for which additional capacity must be developed is 100 octane aviation fuel. . . . The production of aviation and high octane gasolines for mechanized units all decrease our national output and supply of ordinary automobile fuels. To protect our defense efforts and minimize shortages of particular products in particular areas, careful co-ordination of refining operations is absolutely essential to avoid serious bottlenecks in its branch of the industry."

Concrete Oil Barges Planned By U. S. Maritime Commission

NPN News Bureau

WASHINGTON, Sept. 2.—Decision to build ocean-going re-inforced concrete oil barges was reached by Maritime Commission this past week within 24 hours after Admiral Land, commission chairman, told Maloney Oil Shortage Investigating Committee that 100 of these barges would solve the East Coast transportation shortage.

Delivery of barges at the rate of 20 per month can start in January, Admiral Land said during his appearance before committee on Aug. 29.

Maritime Commission received bids on concrete oil barges until Sept. 30. Individual contractors were allowed to bid on from 1 to 30 barges ranging from 5000 to 8000 DWT each.

Percentage of Increases

Basing his estimates on concrete oil barges of 7000 DWT, Admiral Land told Maloney committee 1 barge in tow would increase a tanker's carrying capacity by 27%, while 2 barges would increase it by 45%. One barge towed by existing tankers and sea tugs would increase transportation of oil to the East Coast by 310,000 tons per year, Admiral Land said. Two barges would increase it by 393,000 tons. Three barges would raise the total to 450,000 tons.

Admiral Land made it clear to the committee that he regarded the building of 100 concrete barges as a better solution for the East Coast oil transportation shortage than the proposed East Texas to New York-Philadelphia crude pipeline. Barges would use only 110,000 tons of steel as against 750,000 tons for the pipeline, Admiral Land said, adding: "I don't know where the steel is coming from for the pipeline, but if it is coming from Maritime Commission and Navy ships and tankers, I am against it."

Urges Concrete Barges

Admiral Emory Land, chairman of U. S. Maritime Commission . . . appeared before Senate oil investigation committee; urges construction of concrete barges to relieve East Coast oil transportation shortage

Favors Concrete Barges

Maritime chairman told the committee that 100 concrete oil barges would cost $50,000,000 and could be used as portable storage tanks after the emergency is over. Barges could start delivery of oil to the East Coast more quickly than the pipeline, he said, adding that some of the estimates on the pipeline's completion date have been "overly optimistic."

Another possible solution for the East Coast transportation shortage is new tankers, Admiral Land said. The 25 tankships due to be completed by April 1, 1942, could eliminate the shortage, he stated, since these vessels will be equivalent to 50 of today's average tankers. Maritime chairman, however, was unable to say whether the new tankers would be put in East Coast service.

Would Solve Problem 50%

Admiral Land stated, under questioning of Sen. Burton, Ohio, that the taking over of 26 Axis and Axis-controlled tankers in Latin American ports for Western Hemisphere service will solve half the East Coast oil transportation shortage within 2 months. But a Maritime spokesman subsequently minimized the benefits the East Coast might receive, insisting that Admiral Land was under the impression he had only told the Maloney committee that the Latin American tanker acquisition would "ameliorate" the East Coast situation.

Question of whether the British are making efficient use of their tankers was raised when Chairman Maloney asked Admiral Land about reports of British tankships sailing "needlessly long routes." This brought the reply from the Maritime chairman that the Petroleum Co-ordinator's Office, the Navy and the Maritime Commission all have representatives in England working on more efficient tanker usage.

Cites Improved Tanker Use

Tankers cannot operate efficiently in convoy, and bombing of docks and storage facilities has not helped, Admiral Land continued. Nevertheless, progress is being made in improving tanker use, he said, citing as an

illustration the decrease in the past 2 weeks from 86 to 63 in the number of tankers under repair in U. S. shipyards.

"British tankers all are engaged in the war effort," Admiral Land stated, "and none are engaged in business as usual at the expense of American tankers."

World tanker tonnage was placed at 16,000,000 DWT and total world tankers at 1535 by Admiral Land, who stated that of the total, the democracies have 13,600,000 DWT and the Axis, 2,400,000 DWT.

'Overwillingness' Cited

Sen. Maloney, during hearings, expressed the idea that tanker owners and oil companies may have been "overwilling" to co-operate with the government in furnishing ships for the British shuttle service. "I wonder if they had studied carefully the New England bunker "C" fuel oil situation, whether they would have so hurriedly given their ships to the government and whether it would not have been better to have waited."

To this, Admiral Land replied that "they didn't turn them over until we forced them to do it". Question about "overwillingness" of tankers owners climaxed a statement in which Sen. Maloney had declared that Latin America should not be given equal treatment in the allocation of tanker tonnage with New England, where 75% of industrial plants—many of them engaged in defense work—use bunker "C" fuel oil.

'No More Tankers Diverted'

"So-called gas shortage on the East Coast has been magnified—at least in the eyes of the public—and some government agencies may have unwittingly contributed to this," Sen. Maloney said. "But this matter of heavy oil for industrial use in New England is serious since plants only have 2, 4 or 10 days' supply."

Subsequent questioning by the Connecticut senator secured the statement from Admiral Land that no further changes in tankers on the New England run are contemplated.

Asked about whether there is an oil shortage on the West Coast, Admiral Land stated there were "short tempers, but no oil shortage." Other questions caused the Maritime chairman to state that much has been done to eliminate tanker cross hauls, but more can be done in this direction.

Final question of the morning public hearing was asked by Sen. O'Daniel, Texas, who wanted to know "why such an effort should be made to build pipelines." Admiral Land replied he could not say.

Afternoon was devoted by the Maloney committee to the hearing of Admiral Land in executive session. Questions asked but not answered during the morning indicated that he would be asked to discuss the British tanker situation and the U. S. policy on domestic use of tankers.

Tire Shipments Up

CLEVELAND, Aug. 29. — July shipments of automotive casings totalled 6,455,803 units, 49.5% above July, 1940, shipments, but 15.8% less than June. Total shipments for the first 7 months of 1941 were 43,165,922 units as against 34,704,171 units for first 7 months of 1940, according to Rubber Manufacturers Assn. report.

Change Oil Every 1000 Miles, Says Army With 6-Line Verse to Impress Soldiers

NPN News Bureau

WASHINGTON, Sept. 2.— Change oil at least once every 1000 miles is among requirements laid down by the War Department in its newly-launched campaign to insure adequate lubrication for its armored divisions.

Army personnel charged with the maintenance of armored equipment is being instructed, in lubricating charts, that 1000 miles is the maximum distance for usual operating conditions. "For extreme conditions of speed, heat, water, mud, snow, rough roads, dust, etc., change oil and lubricate more frequently," charts state.

Lubricating charts are being issued for all motorized equipment under the jurisdiction of Army ordnance including scout cars, tanks, field artillery tractors, half-trac personnel carriers, and also guns used by the field and coast artillery.

$100,000 For Lube Charts

Government is spending upwards of $100,000 on the lubricating charts, one of which is carried in a special holder attached to each scout car, tank or gun. War Department now is developing plans to see that soldiers carry out the lubricating instructions on the charts.

Lubricating charts cover more than 50 items of ordnance equipment and were developed from the inspection of vehicles and guns on the assembly line.

To popularize the idea of regular lubrication in the Army, War Department is distributing in conjunction with the lubricating charts, cards on which the following verse appears:

As a Poet Says It

For want of some oil, a bearing was lost;
For want of a bearing, an engine was lost;
For want of an engine a tank was lost;
For want of a tank a battle was lost;
For want of a battle, a democracy was lost—
And all for the want of a film of oil.

Army's New Lubritorium Catches 'Em at 50 mph

NPN News Bureau

WASHINGTON, Sept. 2. — Army's latest is a complete "lubritorium" on wheels which, according to the War Department, can perform any lubricating job in the field as fast and as well as though it were done in a shop.

Mounted on a trailer, this greasing unit can be hauled along highways at 50 m.p.h. and taken anywhere a truck can go. Unit's equipment includes an air compressor operating off a gasoline engine together with all hoses and tools necessary to completely lubricate 2 vehicles at a time, including oil change.

Greasing unit ordinarily would be operated at a lubricants dump and use supplies available there. However, for such times as it must be used away from a base of supply, unit carries an emergency store of lubricants, including three 100-lb. drums of engine oil, two 100-lb. drums of gear oil, one 100-lb. drum of heavy grease, and smaller quantities of special lubricants such as water pump grease and kerosine.

D E A T H S

Frank P. Welch

Frank P. Welch, president of the Illinois Oil Co., Rock Island, Ill., one of the pioneer independent oil jobbers of the country, died Aug. 22, at the age of 64. He had been the active head of the company since it started. Ill health forced him to retire as general manager last spring.

Mr. Welch was a country storekeeper when, with his brother, J. M. Welch, who had been an oil salesman, he started the Illinois Oil Co. in 1908, to sell kerosine to farmers. The company built a refinery at Cushing, Okla., in 1916. It now markets in sections of 7 states.

* * *

Henry L. Piper

Henry L. Piper, Pittsburgh, of Sinclair Refining Co., died Aug. 27 of a heart attack in Hotel Pittsburgher. Mr. Piper, formerly with Ultra-Penn Refining Co., Chicora, Pa., and prior to that with Waverly Oil Works Co., Pittsburgh, had been in the oil business more than 20 years.

* * *

George Thomas Wofford

George Thomas Wofford, 72, founder and president of Wofford Oil Co., died Aug. 21 at his home in Birmingham, Ala.

Mr. Wofford formed the Wofford Oil Co. shortly after the first World War when he was called in by the Woodward Iron Co. and the Tennessee Coal, Iron & Railway Co., to find a market for surplus supplies of benzol. This he did, by blending the benzol with gasoline.

Selling the franchise to Pure Oil Co., Mr. Wofford continued as president. He leaves a widow, Mrs. Carrie McCalley Wofford; two children, George Thomas Wofford, Jr., and Mrs. Mary Winston Marbury, both of Birmingham.

* * *

Joseph H. Whitaker

Funeral services were held in Tulsa last week for Joseph H. Whitaker, 49 year old vice-president of Omar Refining Co. The refinery executive was found dead in his Garber, Okla., hotel room Aug. 17, a pistol with one shot fired lying nearby.

Mr. Whitaker's home was in Tulsa, but much of his time was spent at Garber, site of the Omar refinery.

He moved to Tulsa in 1919 and after working for Pure Oil Co. helped organize Omar Refining Co. A brother, F. S. Whitaker, is president of the Omar company.

In addition to his mother and brother, Mr. Whitaker leaves a widow and one daughter.

* * *

Thomas S. Cooke

Thomas S. Cooke, 54, vice-president of Lago Oil and Transport Co., Ltd., subsidiary of New Jersey Standard which operates its Aruba refinery, was killed in an automobile accident in New York on Aug. 20. Mr. Cooke supervised the design and construction of the Aruba refinery for Pan American Petroleum and Transport Co., Indiana Standard subsidiary, and joined Jersey Standard when that company took over the refinery in 1932.

Can Women Replace Men As Station Operators?

NPN's Women Subscribers Say 'Yes'!

Oil Marketers, looking ahead, are perhaps wondering if women will replace men in service stations because of the national emergency.

To see what women themselves think, NPN asked a number of its "oil lady" subscribers (some since World War I) what they thought of the idea. And more particularly what type of operator they would select.

Here is an informal collection of views on the subject. They come from women who are doing various things in the oil business. Included is the president of an oil company on Fifth Avenue in New York, and a young lady marketer in Carbon Hill, Ala.

WILL national defense and selective service result in operation of service stations by women? Would they make good operators? What would be the public's reaction?

Oil marketers are asking these and other questions on the subject as war activities continue to make them more conscious of a real shortage of help. Perhaps publicity stunts, showing pictures of beautiful professional models, may be causing some marketers to shudder from the prospects, and others to start covering up that bald spot a bit and remarking "Oh boy".

So far as NPN can find, there are not a great number of stations as yet being operated by women. And should the necessity arise, the experience of the oil companies in the last war would not be of much help now. For during the last war there were fewer stations. Most of them were company operated. And lubrication, tire and other services, as part of stations' operations, have all been developed since that time.

In developing some information on the subject that might be helpful to marketers, NPN asked a number of its *women subscribers* for their opinion on the subject, and their experience, if any, in managing girl operators.

The general reaction of these women oil marketing executives is that women can be successfully employed in service stations to-day. A number of them qualify this by stating that they think this is true if there comes a time when it is difficult to secure men attendants.

Need Modern Equipment

Miss Mana Duncan, who for 7 years has managed a Lion Service Station in Carbon Hill, Ala., thinks that if a station has all the latest modern equipment, young women of good character, nice personalities, and those capable of meeting the public in a businesslike and intelligent way would be accepted enthusiastically during the defense program by both men and women. She believes that with modern power

Service station attendants at the Gasette Service Station in Wichita, Kansas. These girls received a training course and are said to be doing a good job

ADVERTISING PAGES REMOVED

The publicity man who sent NPN this photograph with mimeographed "press release" says this girl is wearing a specially designed station uniform by Babette, authority on what the well dressed woman should wear

equipment they could handle the lubrication. She does, however, recommend a porter for heavy work. As manager of a station, Miss Duncan has, at times, found it necessary to work on the island, and she says the public is easily pleased, always respectful, and very appreciative.

Jumping from Carbon Hill, Ala., to 100 Fifth Avenue in New York City, Miss Grace Srager, President of the Chatham Petroleum Co. Inc., tells NPN that she sees no difference in women working in service stations than in using them in department stores or offices. She says that personally she would never lubricate a car, but she could sell lubrication; that she knows plenty of women who understand machinery as well as a man. She believes that the average man would get a great kick out of having his car serviced by a woman. And she also thinks that women drivers would feel that other women would pay more attention to detail, and would perhaps give a better job. In employing help, she would not want girls too young or flighty, neither would she want them too old. She further thinks that during the emergency this would be healthful, clean employment which would do women good, and would be far better than being cooped up in a factory.

Could Dispense Gasoline

On the other hand, Miss Vida Goodlaxon, who is in charge of purchasing and the bulk stocks for the Westland Oil Co. in Minot, N. D. doesn't quite agree with her New York fellow "oil lady". She thinks women could dispense gasoline all right, take care of the bookkeeping, deliver and pick up cars to be serviced. But she doesn't think they could handle lubrication or tire servicing very satisfactorily. And Miss Goodlaxon doesn't believe that either men or women would feel very comfortable while a woman was doing the work. She thinks that women might not have the necessary confidence in a woman's ability to take care of the mechanical details of servicing an automobile. However, if it should come to the point where women help was employed Miss Vida would select strong sturdy girls, from 22 to 28 years old, pleasant looking, but not frail or too glamorous.

In Allerton, Illinois, Mrs. G. L. Cutsinger, Proprietor of the Allerton Oil Co., believes that women at stations in the case of national defense is quite all right. But Mrs. Cutsinger believes that ordinarily the average person would be a little skeptical about a woman for the lubricating and general care of a car. She also thinks that the average woman driver is more critical than men due to their lack of confidence in one another. One of Mrs. Cutsinger's dealers is a lady who has been doing an excellent job for the past 6 years. Her name is Mrs. Leon Burton of Sidell, Ill. Mrs. Cutsinger is of the opinion that young girls would do the best job at the pump island, but that women between 35 and 40 years of age would be better for lubrication work.

Best Age is 22 to 35

Miss Sophia Kohen, who is in the oil business in Toronto, Ont., tells NPN that men have been doing business with her in her oil marketing operations for eleven years, and she finds that they act clean, honorable and sober; that they expect exacting honesty from a woman more than from a man, and that they get it. Miss Kohen says that she cannot see why women can't lubricate cars, since they drive ambulances and motor trucks in army service. She thinks that the best operators are women between 22 and 35 years old, who are sensible, clean, honest and domesticated. In Toronto there are many stations serviced by women.

In Nebraska, Mabel C. Herman, owner and manager of Herman Oil Co. of Fremont, says that she would not personally employ girls except at a master station. But she points out that there are men chefs and cooks, and admits that she would hesitate saying that women could not do the service work as well as men. She adds that temperamentally men are much more adaptable. This lady marketer says that in her opinion the success of women in stations would depend on the showmanship used and the type of girls employed. She questions whether one man in a hundred would have the same confidence in a girl's ability to service his car as men —but she thinks the average man could be sold on the attractiveness of the girl rather than her ability, which could be average. As far as women drivers are concerned, Mrs. Herman does not think the average would consider it possible that another woman could be interested enough to be an attendant for any reason other than to attract attention to herself. And says this marketer: "I would have a man manager of a station. (Believe women are jealous of each other and too apt to pick at each other over small things.) The girls working under the man manager would be 20 and under no circumstances over 30. They should be girls with a sense of humor, ability to take what comes, have sales ability, and be attractive and know how to meet people."

In Middletown, Ohio, women in stations are apparently no particular novelty. Mrs. Lucy Ralston, owner of Ralston Petroleum Service, in that town has operated a station since her husband's death 9 years ago. She

In Laguna Beach, Calif., an independent Mobilgas dealer finds this young lady as efficient as the drafted man she replaced. Experienced women marketers warn against employment of girls who might give lady customers the impression they were trying to "show off"

PRESENTS...

Another

GOLD MEDAL ACHIEVEMENT

... AND THE ANSWER TO A PROBLEM KNOWN TO ALL FLEET OWNERS

QUAKER STATE engineers and technicians have been constantly alert in developing a motor oil that more than meets the lubrication requirements of *peak-load service* such as that experienced in trucks, buses, tractors and other modern motorized equipment—both gasoline and Diesel engine powered. QUAKER STATE is, therefore, proud to announce the new QUAKER STATE HD Oil—a high-quality product which has been especially formulated and refined for peak-load, heavy-duty service.

This new QUAKER STATE HD Oil is in action now! It is working on tough jobs at the present moment. It is more than meeting the demands of fleet-owner service 24 hours a day. It is pushing lubrication costs down. It is surrounding motors with the lubrication safeguards that mean longer life at the very moment when new-unit production of the automotive industry is being curtailed.

There is no doubt about it, QUAKER STATE HD Oil has arrived on the scene at a crucial moment for operators of all types of motorized equipment, and it's knocking at the door of your office right now.

If you want a real eye-opener on how to reduce lubrication costs and secure longer and better service from your equipment, get a trial supply from your QUAKER STATE distributor — and be sure to sign and mail the coupon in the right-hand corner of this page today.

OIL CITY, PENNSYLVANIA

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Oil City, Pa., Dept. HD-1

Gentlemen:

Please send me your new, free, 8-page illustrated booklet on Quaker State HD Oil.

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City.....State.....

(Cut this out—Fill in—Paste on Penny Post Card)

ADVERTISING PAGES REMOVED

Two bona fide station girls, who worked during the past vacation season in an independent station in Portland, Me.

believes that when it becomes difficult to secure men attendants that women can handle the job quite well. She does think they should be especially trained to lubricate cars; otherwise their sales should only be gasoline. Mrs. Ralston says that she personally likes to be waited on by women, and she thinks that men would become accustomed to it. She prefers women between the ages of 25 and 40, who enjoy meeting the public and are sales minded.

Need Lubrication Training

Mrs. Ralston told about a woman manager in Middletown, Mrs. Fern McCoy. It so happens that Mrs. McCoy is also an NPN subscriber. She has worked in a service station for 13 years, and has been manager for the last three years. She, too, believes that service should be limited to selling gasoline unless special training in lubrication is first given. And she doesn't think the average man has the confidence in a woman as in a man. If they are not afraid of getting their hands dirty, are strong, neat, pleasant and not afraid of work, this experienced woman operator believes a girl will make good in a station.

Mrs. Monty B. Hart, President of Hart Oil Co. of Rockford, Ill. believes that with the aid of a grease monkey, or perhaps a man in charge to do the greasing, tire changing and so on, women could be used very successfully in stations. But Mrs. Hart is not in favor of women doing men's work when men are available; that a woman's place is in the home. But should she find it necessary to choose women, she says she would select dignified, naturally refined women between the ages of 25 and 35. Mrs. Hart is very emphatic that women attendants should first be trained before going to work at stations.

"To me it is unquestionably a matter of adjustment to the idea except for those phases of the service naturally awkward for women—and they could be directed by women", says Mrs. Elsie F. Fisk, oil company manager in Steele, Mo. The age of women operators most likely to succeed would be in the middle thirties, thinks Mrs. Fisk.

In Washington C. H., Ohio, Mrs. J. E. Smith is treasurer of the J. E. Smith Oil Co. Mrs. Smith thinks there should be one active man, up to the age of 50, at every station. But that women can give good service in handling cash, credit or courtesy cards, merchandise sales and gallonage reports. Mrs. Smith agrees with some of the other NPN "oil ladies" who think that the average woman driver would be critical of girls in stations—if their appearance or conversation was not pleasing; that they might be faultfinding and over zealous as to personal affairs. Mrs. Smith recommends that brunettes of 25 to 30 years, unmarried, be selected for island work. For some of the heavier work she would select women who have done factory, laundry or similar heavy work.

Women Already Employed

Thus we have a good cross section of what experienced women in the oil business think of women in service stations. In various parts of the country will be found a scattering of stations partially or fully operated by girls and women.

In Wichita, Kans., J. C. D. Nicholson, Skelly jobber, has trained girls to operate his stations. They are known as "Gasettes" and have been refinery trained in the proper servicing of automobiles. The Johnson Oil Co., also of Wichita, has girl service station operators. These girls are known as the "Tigarettes." In both cases men managers do the tire, lubrication and battery service.

In Laguna Beach, California, Freeman Fowler, a General Petroleum dealer, early this summer replaced a drafted attendant with an attractive young lady. The experiment was so successful that Fowler plans to use women attendants as fast as it is necessary to replace help. But he plans to leave the heavier mechanical work for trained men not subject to draft. Reaction of the public, according to Fowler, has been most favorable.

Outside of Baltimore, Robb Tyler, owner of the Philadelphia Road Esso station has 5 girls, ranging in age from 17 to 20 doing what he says is a fine job formerly handled by men who left for the army and defense jobs. These girls are paid 30c an hour, with 10% and 20% commissions on merchandise, other than gasoline, for 44 hours of work a week. But there is a man to do the heavy work at the station.

In Portland, Me., 2 high school girls are handling the gasoline, oil and accessory sales for an independent Shell operator, Ralph Hall. In New Haven, Mrs. A. F. Zaniewski is operating her husband's Texaco station while he is in the navy.

Here and there throughout the country, girls are being used in stations. There have always been some women operators. They seem to do all right at it.

Guide for Hiring

Should the time come, when out of necessity girls must be employed to replace men now in stations, perhaps no better guide could be followed in making the selection than by following the ideas of NPN's women readers.

A composite picture of a woman operator as recommended by NPN "oil ladies" would look something like this:

Age: Between 25 and 35.

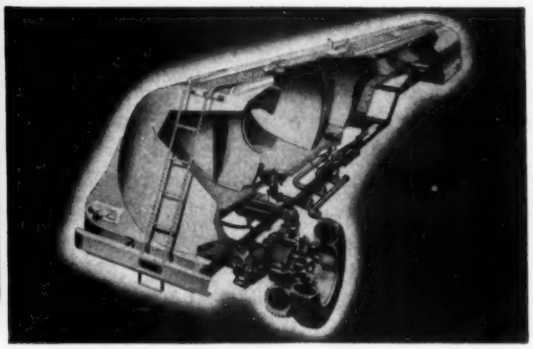
Type: Strong, neat and pleasant. (Brunettes seem to be preferred).

Training: Same as men operators. Should have sufficient mechanical understanding to operate lifts, greasing equipment and other modern station equipment.

The composite station girl would be neither "flighty" or hard boiled and know how to handle men customers so they don't make nuisances out of themselves; yet not give women customers the impression that the operator was there to attract attention to herself.

"PASSENGER CAR" RIDE *for* TANK-TRAILERS

New features, too, in these new tanks of high strength nickel alloy steel! Redesigned surge plates add strength. Higher top flushing for manhole protection. Provision for easy addition of emergency valve if not originally installed! And many others!



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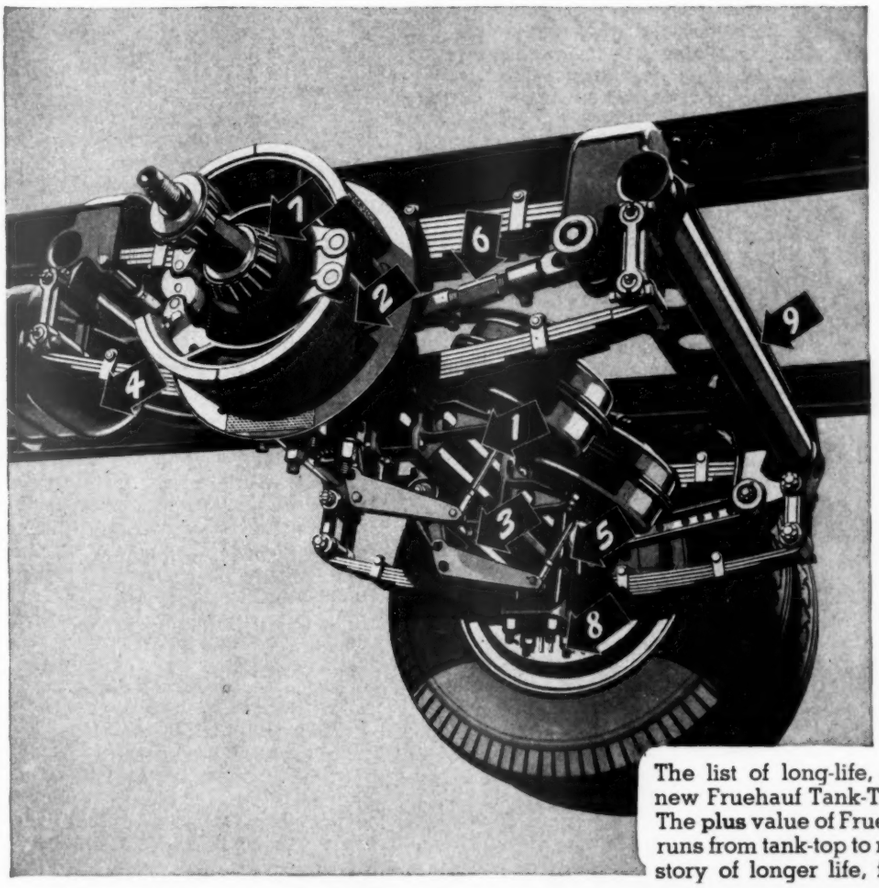

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3 **360° Slack Adjuster.** Perfect on-the-road brake adjustments are easy!

4 **Emergency Vacuum Tank.** You can brake your Fruehauf Tank-Trailer even after the truck motor stops!

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7 **Roller Bearings.** Generously over-size for extra life, extra rolling ease.

8 **Mountain-Type Brakes.** For quick, sure stops, long-life, minimum attention.

9 **Stabilizer Bar.** Across chassis at both front and rear spring hangers.

The list of long-life, money-saving features on the new Fruehauf Tank-Trailers doesn't stop there, either. The plus value of Fruehauf Engineered Transportation runs from tank-top to road-bed. Why not get the whole story of longer life, faster service, greater savings?

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Passenger Car is More Than a 'Necessity'

Hundreds of new defense plants have been able to obtain their required number of workers only because of the private automobile. There was no time to house workers near these plants, so they had to be transported daily to and from their homes. The passenger car was the principal means of transportation—in many cases the only transportation—to the new plants. In peacetime, the passenger car was a "necessity"—as is shown by data in this article. Now, in the defense emergency the worker's car is a vital link in the assembly line of our Arsenal of Democracy.

MORE than 96% of the 27,000,000 passenger cars in this country are engaged in necessity driving, for purposes connected with earning a living, or closely related to it.

Of the total driving by all passenger cars, 54% is business-necessity mileage.

In an analysis of road usage in 6 representative states, it was found that, of 5 trips made by all cars, 3 are for driving to work or on business; 1 is for marketing, driving to school, church or a transportation terminal; and only one trip is for social and recreational purposes.

Most of the 550 round trips a year, average for all cars, are less than 5 miles.

These are highlights in a factual survey of automobile usage made by the Automobile Manufacturers Assn. They show the extent to which the operation of a passenger car is a vital economic necessity in family life and illustrate how drastic curtailment of driving, as a war conservation move to save gasoline, would dislocate industrial and business activity generally.

In addition to this data on the business-necessity (later referred to as necessity) use of passenger cars, the report presents for the first time information on the nature and length of trips, extent of driving by occupations, by size of community where the car is owned, according to age of the car, and other driving habits.

This information will be found helpful by the management of oil marketing companies, if they are called upon to put into effect any war defense gasoline saving plan; as it shows the extent of necessity driving by their station customers for various occupations, where curtailment beyond a certain point would seriously affect the driver's business activity. The data in the report will also be of service to station management, in indicating the extent to which service stations can key their sales and service programs around customers' regular driving habits, in place of basing them entirely on mileage their cars show from visit to visit.

For example, the extent of driving which is shown to be short, local trips, emphasizes the importance of a station making its appeal for trade on the basis of convenience to the customer, in fitting in his calls at the station with his normal driving habits.

Data in the report also indicates how a change in the job of the family wage earner, or the school the children attend, or the districts where shopping is done, may change gasoline and oil buying habits. It demonstrates the importance of selling regular oil change and chassis lubrication, since so much driving is local, with many stops and starts, conditions under which contamination of oil in the crankcase is increased.

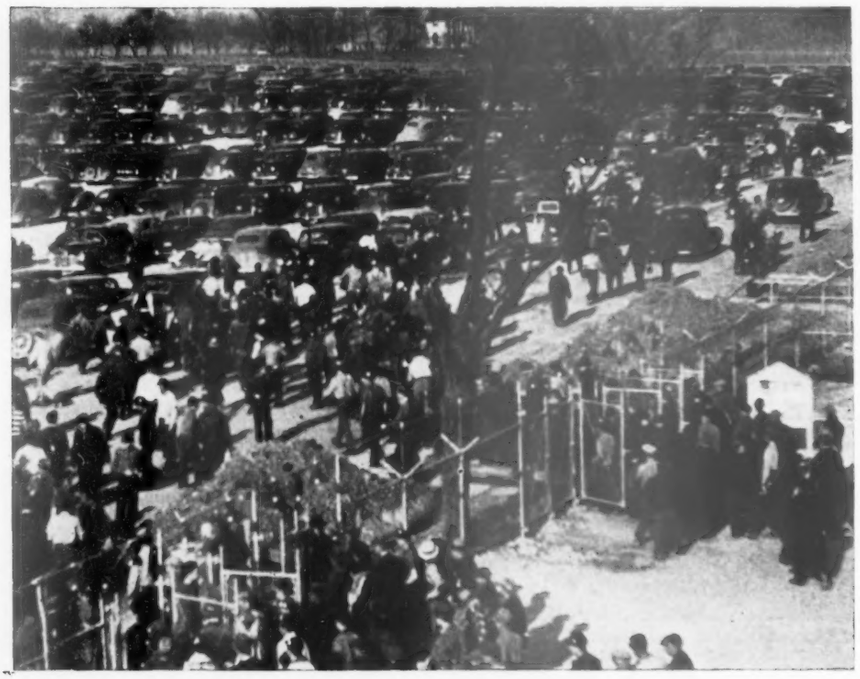
Some oil companies, whose stations handle wider lines of merchandise

Detroit Workers Use Autos During Street Car Strike

Thanks to private automobiles, defense production was at a "business as usual" pace in Detroit during the recent Detroit Street Railway strike which tied up public transportation throughout one of the most vital defense centers in the U. S.

Although not a street car or bus moved on Detroit's streets during the strike, only one plant closed temporarily—and that a plant not engaged in defense work. Most plants reported "surprisingly few absentees" and some said fewer men were absent on the first day of the paralyzing strike than normal.

Automobile traffic increased 22% as Detroit's defense workers drove their own cars to work. Detroit is its best customer for its principal product, with one out of every 3.7 Detroiters owning his own passenger car, as compared with an average of 5 persons to every car throughout the U. S.



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than automotive necessities such as tires, batteries, fan belts, and so on, now base their sales quotas on other factors than mileage of customers' cars. Their experience has been that the customer who drives his car the most miles and uses the largest amount of gasoline each month, is not necessarily the best customer for other merchandise. They have found that his normal driving habits, the degree of care he gives his car, and the trend in general business conditions are factors in sales at service stations.

Mileage Controls Consumption

"The amount of mileage driven is the factor that controls gasoline and oil consumption," states the A.M.A. report, "and to a great extent the wear of the car, repair and parts replacements.

"But to measure the need for automobile operation in continuing the present organization of family and individual living, or to meet modifications made necessary by the current national effort for defense, the number of times each day or week or year that a car is driven to the factory, the office, the market or school, may be found the most substantial yardstick."

This survey by the Automobile Manufacturers Assn. on car usage embraced findings from 3 sources. First was a survey covering 76,000 car owners, in 6 representative states, in cooperation with highway authorities (See Table 1). Second was a survey covering the entire country, made during the winter of 1940-41 by the Opinion Research Corp. Third was a study of road usage in 29 other states, which segregated driving into necessity on one hand and social-recreational on the other (See Table 2).

Included in necessity travel are trips to work, driving in occupational duties (as salesmen and doctors), shopping trips, driving to school, church, and transportation terminals, and use of a car in hauling. While some of the data analyzed in the survey goes back to 1936-38, it is recognized that the present increased industrial activity has even increased the necessity use of cars beyond the proportions shown in the report. Following is a compilation, largely in tables, of data presented in the report.

Most Automobile Trips Are Less than 5 Miles

In urban areas, passenger cars average 605 round trips a year, of which 462 (76%) are for necessity uses.

In rural districts, including small towns, number of annual trips is 453, of which 352 (77%) is necessity driving.

Country-wide, for all cars, average number of trips is 550, of which 422 (over 76%) is necessity driving.

Average annual necessity driving varies by states from 46% to 71% of total mileage. In 30 states where comparable data was available, the average of necessity driving was found to be 54%, or more, of total mileage.

Even outside cities, round trips of less than 5 miles make up the major portion of all trips taken. Of all long

Table 1—Approximate Total and Necessity Mileage of Passenger Cars and Number of Necessity Trips, for Six Selected States, for 1940

(Data from Automobile Manufacturers Assn. survey of automobile usage)

State	Approx. Total Mileage	Approx. Necessity Mileage	Avg. No. Total Trips	Avg. No. Necessity Trips	Avg. Mileage Necessity Trip	% Nec. Trips to Total Trips
Connecticut	8,300	4,600	644	487	9	75.7
Georgia	7,800	5,100	612	514	10	83.9
Indiana	6,000	3,100	557	425	8	76.3
Michigan	9,000	4,500	518	383	11	73.9
Nebraska	6,900	4,200	541	424	10	78.4
Oregon	7,700	4,100	487	394	10	80.9

Like Automobile Drivers

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As car drivers, pilots expect and get high class service. As pilots, they want the same modern service for their planes.

With Serv-A-Plane, you can fuel their planes speedily, accurately . . conveniently. Spacious shelves permit canned oil, light bulbs and other accessories to be kept conveniently at hand. Power hose rewinds saves time and energy. To build sales, install Serv-A-Plane. Get the facts, NOW!

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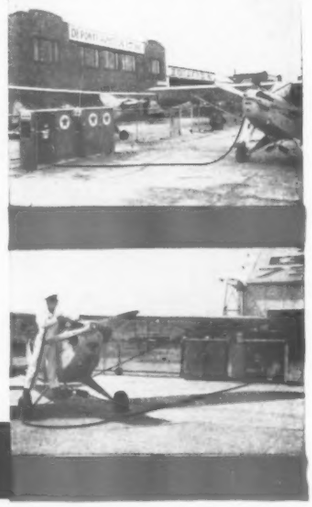

OTHER BOWSER PRODUCTS FOR THE AVIATION INDUSTRY
Underground Fueling Systems
Marine Type Fueling Systems
Portable Fueling Systems
Defueling Systems
Aircraft Fuel Meters
Metering Systems
Gasoline Pumps
. . . And other equipment for handling gasoline and oils.

PIONEER BUILDERS OF FUELING EQUIPMENT

Table 2—Approximate Total Mileage Driven by Passenger Cars in 35 States in 1940, and Proportion of Necessity Mileage

State	Annual Mileage	Necessity Mileage	% of Necessity Travel
N. Atlantic			
New York	9,000	5,100	56
New England			
New Hamp.	8,100	4,700	60
Vermont	7,000	4,400	62
Conn.	8,300	4,600	54
N. Central			
Ohio	7,000	3,300	49
Indiana	6,000	3,100	54
Illinois	9,000	4,400	48
Michigan	9,000	4,500	50
Wisconsin	7,000	3,500	50
Minnesota	6,600	3,000	46
Iowa	6,500	3,600	58
Missouri	7,700	4,800	63
N. Dakota	6,000	3,600	62
S. Dakota	6,000	3,400	57
Nebraska	6,900	4,200	62
S. Atlantic			
Maryland	8,100	5,600	71
Virginia	8,600	5,500	64
W. Virginia	8,500	4,500	56
Georgia	7,800	5,100	68
Florida	9,800	5,500	57
S. Central			
Kentucky	8,000	5,200	65
Alabama	8,300	5,700	69
Kansas	7,900	4,400	56
Louisiana	9,600	6,700	70
Oklahoma	8,300	5,800	71
Texas	8,700	5,200	59
Mountain			
Montana	7,600	4,800	63
Idaho	6,600	4,500	67
Wyoming	7,700	4,600	56
N. Mexico	8,500	4,800	56
Arizona	8,200	4,900	59
Utah	8,600	4,800	55
Nevada	8,000	5,300	66
Pacific			
Washington	7,600	4,700	62
Oregon	7,700	4,100	57
Approx. Avg. for 35 states	7,800	4,500	58

trips, however, three-fourths are for social-recreational purposes.

"Short trips tend to be the frequent ones, closely integrated with routine movement within the community," the report states. "Driving records of motorists confirm that the preponderance of short trips represents also the preponderance of necessity driving."

In rural and urban areas both, about one-third of all car owners make from 200 to 400 round trips a year for necessity purposes. This bracket is dominated by cars making one trip a day to and from work, or on business.

Apart from this central third of cars, one-fourth of all urban-owned cars make more than 600 necessity trips a year.

Six out of 10 urban-owned cars are regularly driven to work and back, 60% of these once a day.

The effect of occupation upon number and frequency of trips is pronounced. As compared with a general average of less than 5 miles, the average length of round trips for necessity driving is 12.5 miles for farm cars, 10 miles for doctors.

The data summarized above is based

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UNCHANGING QUALITY IN A CHANGING WORLD!
Regardless of the lights or shadows in the rapidly-shifting international and national picture, MARATHON products remain today, as always, thoroughly dependable.
We welcome inquiries from jobbers interested in a line of gasoline, motor oil and greases which has proved its ability to develop customer satisfaction and increased profits.
Phone, wire or write for full details. No obligation, of course.
THE OHIO OIL COMPANY
INCORPORATED
FINDLAY, OHIO

on a different survey than that for the 6 representative states, where it was found that 4 out of every 5 trips were for necessity driving.

While the total number of miles passenger cars are driven annually varies largely according to the size of the community, the number of miles driven for business and related purposes holds fairly uniform, irrespective of the population group.

The survey of the auto makers association disclosed that the average of total annual miles driven varied from 6606 in unincorporated areas (farming districts and very small towns) to nearly 9000 miles in cities of 100,000 population and over (See Table 3). However, necessity use of cars is 4331 miles a year in unincorporated areas and only 4636 miles in large cities. Thus necessity mileage is 65.6% of the total in the former classification and 51.5% in the latter.

"In almost all cities, local transportation has become primarily automotive," stated the report. "In cities up to 500,000 population class, as many as 70% or more of the people entering the business sections of a city on a typical day (excluding pedestrians) do so by private automobile. It is also disclosed that there are now 2100 towns and cities, in population from 2500 up to the 25,000-50,000 class, which have dispensed with, or have grown up without, intra-urban mass transportation systems of their own. Their combined populations of 11,844,000 persons depend, for routine movements other than afoot, upon private cars.

"With all the variations in mileages and trips, automobile travel in communities of all sizes, from farm to village to metropolis, is preponderantly for neecessity purposes."

Table 3—Total and Necessity Driving By Size of Community

(Data from Automobile Manufacturers Assn. Report)

Population Group	Average Annual Miles Per Car Total	Necessity	% Necessity Mileage
Unincorporated ...	6,600	4,331	65.6
Less than 1000 Pop.	7,436	4,404	59.2
1,000- 2,500 Pop..	7,843	4,399	56.1
2,500- 5,000 Pop..	8,236	4,431	53.8
5,000- 10,000 Pop..	8,221	4,363	53.0
10,000- 25,000 Pop..	8,293	4,267	51.5
25,000-100,000 Pop..	8,360	4,311	51.6
100,000 and over ..	8,994	4,636	51.5
All Areas (31 states)	7,796	4,417	56.7

Effect of Occupation On Use of Cars

For 5 states, Georgia, Indiana, Michigan, Nebraska, Oregon, the nature of the survey made it possible to sort out 7 broad occupational classifications, covering more than half of all car owners interviewed. Total miles driven and the necessity mileage was determined for each class (See Table 4).

The traveling salesman's average annual mileage is shown as 18,791 miles, more than double the average for all cars. Average for physicians is also high (nearly 13,000 miles) and doctors have the highest number of round trips per year of all classes, 947.

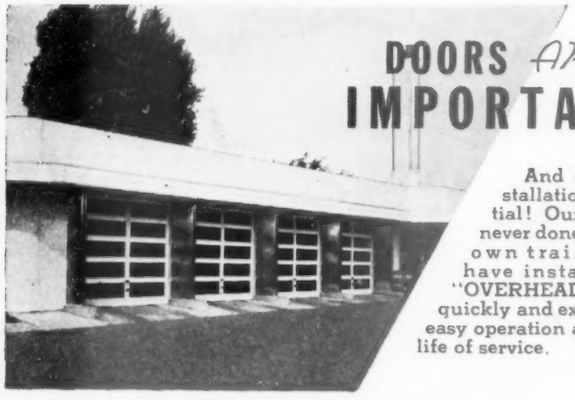
While the doctors' mileage is more than twice that of farm-owned cars, the same percentage of annual mileage in each case (66.8%) is for necessity purposes.

"The only car owner groups found

Table 4—Annual and Necessity Mileage by Occupations

(Data from Automobile Manufacturers Assn. Survey of automobile usage)

Occupation	Average Annual Mileage	% Necess. Mileage to Total	% Necess. Trips to Total Trips
Commercial Travelers	18,791	80.9	86.5
Physicians	12,932	66.8	89
Legal Profession ...	12,898	61.6	77.4
Insurance-real estate salesmen	12,618	71.8	85.8
Salesmen, unclassified	12,303	66.6	81.5
Workers (ind. and const.)	7,657	49.4	72.3
Farmers	5,750	66.8	78.3
Other occupations ..	8,650	50.7	76.6
Avg. mileage all groups	8,139		



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Any size to fit any opening - hand-operated or electric. Built as a complete unit at the factory, with every part designed for efficiency. This is the door with Salt Spray Steel and the weathertight MIRACLE WEDGE closure.

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HARTFORD CITY, INDIANA, U. S. A.

NEW PRODUCT OPPORTUNITY

Household sprays, cattle sprays, etc., make an ideal addition to your line in days when sales of other products are curtailed. No pyrethrum supply troubles. MGK, the oldest manufacturer of standardized pyrethrum concentrates, now making long term contracts for Pyrocide 20. Priced right for making high-grade sprays to sell at a profit for you.

McLaughlin Gormley King is the originator of standardized pyrethrum concentrates and willingly gives its advice and assistance to manufacturers of insect sprays. If we can be of assistance, do not hesitate to ask for information on formulas, markets, packaging, or any other information pertinent to these products. We will be glad to help.

McLaughlin Gormley King Co., Dept. NPN, Minneapolis, Minn.

driving primarily for recreational and social purposes are retired persons, widows, students and domestic workers," stated the report.

Miles a Car is Driven Declines with Its Age

The number of miles a car is driven and the number of trips taken declines with advancing age, the survey disclosed. During its life a car changes hands two or more times, often moving from one occupational group to another.

Occupations which require high mileage and constant use tend to have new or "young" cars, trading frequently. The survey found that 89% of doctors' cars were less than 5 years old, 33% one year old or less. Of cars owned by farmers, less than 5% are one year old or less, and 30% are 9 years old or more.

The proportion of necessity miles to total mileage is fairly uniform, however, regardless of age of the car, as is the proportion of necessity trips to total number of round trips (See Table 5).

Table 5—Effect of Car Age on Mileage

(From analysis in 6 states. Figures from report of Automobile Manufacturers Assn.)

Age of Car	Average Annual Mileage	% Necess. Miles to Total	Avg. No. Round Trips	% Necess. Trips to Total
1 year	10,768	54.7	619	77
2 years	9,628	54.7	620	77.5
3 years	8,592	54.2	593	77.2
4 years	8,106	53.5	604	77.6
5 years	7,624	52.8	545	75.2
6 years	7,083	53.0	524	74.8
7 years	6,718	53.9	496	75.5
8 years	5,804	56.6	468	77.1
9 years and over	4,770	61.2	417	78.5

Use of Automobiles In Family Shopping

Six out of 7 passenger cars are used for family shopping, the survey reported. Of the cars so used, almost all made shopping trips once a week, and two-thirds of them oftener (See Table 6).

Two-thirds of car owners do their principal marketing 2 or 3 miles from home; 45 out of each 100 car owners drive 3 or more miles and 30 out of 100 drive 5 miles or more to shop.

"An important factor in the market picture is that fully a third of all car owners habitually drive to at least one secondary shopping point," states the report. "Of these, 3 out of 10 say the secondary market is 8 to 18 miles from home. Roughly one of every 14 cars goes more than 30 miles."

One in every 5 automobiles is used in driving to and from school, according to records of 2 states, Connecticut and Georgia, which were specially analyzed on this point. On a country-wide basis, it was reported that one-third of the families having children of school age use their cars frequently for this purpose. The average round trip driving to school in the 2 states was found to be 5.9 miles.

"With one-half of all automobile mileage chargeable to purposes of making a living, the distribution of necessity driving of all sorts over the week acquires importance," said the report. The following distribution was found:

Monday through Friday: 65% of all passenger car mileage tied up with making a living.

Saturday: 45% of mileage used going to work or business; but 22% used for shopping, against half as much shopping mileage on other week days.

Sunday: Despite the fact this is the day when much of the recreational driving is done, 21% of mileage is for purposes connected with work.

Table 6—Frequency of Use of Cars In Shopping

(From Automobile Manufacturers Assn. Report)

How Often Used	% of Total No. of Cars
For daily shopping	23
Less than daily, oftener than once a week	32
Once a week	24
1-3 times a month	4
Less than once a month	3
Cars not used to shop	14

Diagram: Piston Ring Forming Machine.

Problem: Inadequate lubrication and varying coefficient of friction (Fc) in Guide A and on Forming Head D resulted in unequal ring lengths due to jerky feed through Rolls RR.

Solution: "We have found that with ordinary lubrication irregular slippage occurs in the feed rolls, but with the use of "Oildag" this slippage is practically eliminated and gap accuracy can be maintained", says a prominent piston ring manufacturer.

Other tough problems such as the lubrication of forging dies, bearings operating at high temperatures, etc. can be solved by your oil supplier with lubricants containing "dag" colloidal graphite. Write for Bulletin 130 X

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Make More Motorists
STOP
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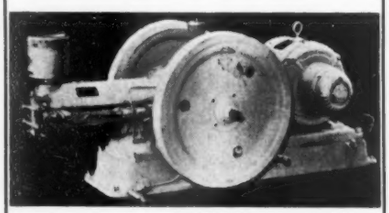
will brilliantly light your station and attract extra business. Have an abundance of light and extra power for *only 1c a kilowatt* with your own Dieselectric Plant. Operate on cheap, non-explosive fuel. Compact, rugged, built for heavy-duty service. Easy to install, simple to operate. *3 to 30 K.V.A.*—manual, electric or automatic control. Available under F.H.A. terms, nothing down, 36 months to pay.



Write for complete details and Pay-from-Savings Plan.
3706 Oakland Avenue, Kansas City, Mo.

WITTE ENGINE WORKS
• LARGEST BUILDER OF SMALL DIESELS •

New Movements of Oil to East Include Barge, Truck and Rail

NPN News Bureau

WASHINGTON, Aug. 30. — An inkling of how oil companies are using their ingenuity to overcome East Coast oil transportation shortage, due to diversion of coastwise tankers to British service, was contained in Acting Petroleum Co-ordinator Davies' statement Aug. 28 to Senate Oil Shortage Investigating Committee.

New terminals, expanded and faster loading facilities, trucks, barges and tank cars form a part of the picture, along with new pipeline movements.

By Truck and Rail

Sinclair Refining Co. plans to ship all-rail 2000 bbls. of crude daily from Mississippi to Marcus Hook, Pa., with 4000 bbls. daily piped from Illinois to Ravenna, Ohio, thence by rail to Marcus Hook. Another 1400 bbls. daily is coming from Illinois via pipeline to Olean, N. Y., thence by truck to Wellsville, N. Y.

Movement of 10,000 bbls. of crude daily by rail from Benton, Ill., to Philadelphia will be started soon by Atlantic Refining Co., using 600 tank cars. A new $1,500,000 terminal on Delaware river will save vessel time of 5000 bbls. daily. In all, Atlantic expects savings in tanker capacity to total 26,760 bbls. daily.

Barging From Texas

Pan American Petroleum & Transport Co. is barging from Texas City up the Mississippi and Ohio rivers to Charleston, W. Va., and Pittsburgh, with volume up from 35,000 to 77,000 bbls. since July 1, and expected to reach 100,000 bbls. as soon as new equipment is installed.

Shell Oil Co., Inc., is shipping by rail from its Houston refinery as far north as Minneapolis and barging from its New Orleans plant to Wood River, Ill., and Ohio River points. This has permitted use of pipeline to Chicago and Toledo for products that are loaded on lake tankers for Buffalo. From the Columbus, Ohio, pipeline terminal products are moving by rail into East Coast area.

New Equipment Used

Barge units with total capacity of 100,000 bbls. have been pulled off the Mississippi river by Socony Vacuum Oil Co. and put into service to Pittsburgh, with mid-western transportation loss replaced in part by tank car movement. Socony has also speeded up its tankers, established storage at key points, increased size and number of cargo hose and other equipment so as to shorten time of tankers in port. Present steps have saved 15,500 bbls. daily of tanker capacity, with an additional 11,000 to 16,000 bbls. daily saving expected soon.

New Jersey Standard formerly supplied refinery at Sarnia, Canada, with 10,000 bbls. daily of Venezuelan crude piped from Philadelphia. This has been displaced by pipeline movements from Mid-Continent and Illinois fields. Barge movements on the Ohio river have been increased at rate of 2,000,000 bbls. annually. Approximately 17,000 bbls. daily of southwestern crudes are lifted in tank cars at Martinsville, Ill., and Lima, Ohio, for shipment to Bayway, N. J. Another movement of Illinois crude to Bayway via tank car is expected to begin in October and reach 16,800 bbls. daily by December.

Uses Rails, Releases Barges

A rearrangement of its lake and river equipment has enabled The Texas Co. to supply its western New York requirements from Lockport, Ill., refinery instead of by tanker from the Gulf. This has involved pulling barges off the Tennessee river and shipping by rail to Tennessee and Northern Alabama points from Gulf terminals. Marine equipment on the lakes has been diverted to Buffalo, requiring tank car shipments to northern Ohio and lower peninsula of Michigan, formerly served out of lake terminals. When navigation season closes, western New York requirements will be filled by tank car out of Lockport, Ill.

Tide Water Associated Oil Co. reported spending $598,700 to enlarge its pipeline from Western Pennsylvania and a new line to its Avon, Calif., refinery, releasing one large tanker for the East Coast.

El Dorado Refining Hails 25th Birthday

Special to NPN

EL DORADO, Kans.—El Dorado Refining Co. this year celebrates that day 25 years ago when 2 oil men and 3 Kansas businessmen organized the company and began construction of a 600-bbl. refinery to process oil from the newly-discovered El Dorado field.

C. G. Yankey, now president of the company, was a Wichita attorney when he and A. L. Derby, F. S. Carroll, C. R. Edgecomb and A. E. Reilly formed the company in the summer of 1916. Mr. Derby was a producer, Mr. Edgecomb a refining engineer, and the others were businessmen.

The first shipment of gasoline from the El Dorado, Kans., refinery was on Oct. 26, 1916 and soon the company's 300 tank cars were hauling gasoline to supply a war-time need.

Now Integrated

From the original 600-bbl. plant, the refinery has been enlarged to its present operating capacity of 8500 bbls. of crude daily. One of the first Winkler-Koch cracking stills was installed at

the plant in 1928 and the same year the "El Reco" brand name was introduced. Since then the company has developed into a fully integrated company, listing production, refining, transportation and marketing facilities as assets.

Robert H. Bradford, vice-president and treasurer of El Dorado Refining Co., came with the company back in 1916 as a substantial stockholder and director. T. A. Helling, the company's vice-president and general manager, started with El Dorado in 1916 as stenographer in the traffic department.

Directorate of the company includes Paul C. Yankey, president of the company that bears his name; G. C. Anderson, company's manufacturing superintendent; C. W. Rice, sales manager and G. J. Peterschmidt, secretary.

Oil Well Use Approved For Manila Cordage

NPN News Bureau

WASHINGTON, Sept. 2.—Oil well use as drilling cables, catlines, spinning lines and torpedo lines is one of the four purposes for which better grades of manila cordage still may be processed, under an Office of Production Management order today placing manila fiber and cordage under full priority control.

Other uses are defense orders; marine use for ships, towing, commercial fishing and on inland waterways and for use in mining for hoisting and transmission of power.

Priority restrictions on use apply to Classes A and B manila cordage. Class C cordage, containing only 50% manila fiber, may be sold for all civilian use without restriction.

Automobile Accessories Are Sold By 61% of All Service Stations

CLEVELAND, Aug. 30.—Service stations sold almost $500,000,000 worth of auto supplies, grease, service jobs, food, beverages, overnight lodging and other merchandise in 1939, according to a large sample analysis of figures from the 1939 Census of Business.

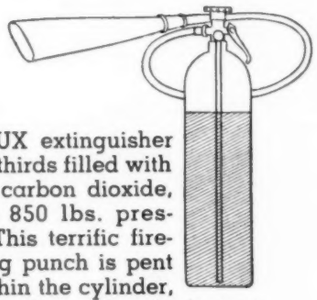
In addition to gasoline and oil, 61% of the stations sell tires, batteries, radios and other accessories; 52% offer greasing, washing and other servicing facilities; and 39% sell fuel oil or kerosine.

Gasoline sales totaled 9,150,359,000 gals. for the 176,101 stations which reported commodity sales. This indicated that 12,400,000,000 gals. were probably sold by all service stations. Gasoline cost to motorists averaged 17.3c per gal. of which almost 1/3 was federal and state taxes, according to figures from the survey.

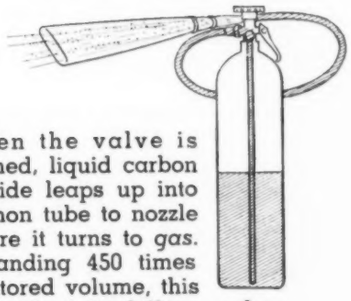
Three-fourths of all service stations which sell 75% of the total $2,800,000,000 service station dollar volume were included in the sample survey.

Do you know how a fire-fighter kills fires?

INSIDE INFORMATION ON EXTINGUISHERS



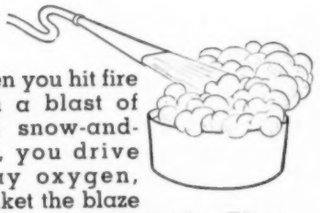
The LUX extinguisher is two-thirds filled with liquid carbon dioxide, under 850 lbs. pressure. This terrific fire-fighting punch is pent up within the cylinder, ready to batter fire the instant it is unleashed. Carbon dioxide will not deteriorate. Thus it requires no annual recharging.



When the valve is opened, liquid carbon dioxide leaps up into syphon tube to nozzle where it turns to *gas*. Expanding 450 times its stored volume, this blizzard of fire-killing carbon dioxide snow-and-gas, penetrates to every part of the fire area, smothering flame.

HOT DOPE ON FIRE

Physics books say any substance will burn, if heated in the presence of sufficient *oxygen*. Best way to kill oil fires is to remove oxygen. That's how a rug or blanket smothers some fires; that's how LUX fights blazes.



When you hit fire with a blast of LUX snow-and-gas, you drive away oxygen, blanket the blaze with carbon dioxide. That chokes flames. LUX carbon dioxide is a lightning-fast extinguishing agent, one of the fastest known to science.

SPLIT-SECOND EXTINGUISHING—

Wherever you have a fire hazard in flammable liquids or electrical equipment, there's a LUX portable, a LUX wheeled unit, a built-in LUX System to handle it.

Do you have all the facts about LUX protection? Do you know about the small trigger-control 2- and 4-pounders? Have you considered fixed systems for your severe hazards? Mail the coupon. We'll send you a full report.

Walter Kidde & Company, Inc.
929 West Street **Bloomfield, N. J.**

You may send me information on:

CHECK YOUR CHOICE

☐ LUX Portable Extinguishers

☐ LUX Built-in System Protection

NAME.....

COMPANY.....

ADDRESS.....

MERCHANDISING

This is a readers' forum on merchandising of petroleum products, automotive accessories and allied lines. Let us have your ideas on how to improve selling at stations. Address: Merchandising Editor, NATIONAL PETROLEUM NEWS.

Peddlers of New York As Seen by a Station Man

August 13th NPN published a letter from the owner of Stone Corner Trading Post, Wolcott, N. Y., in which this gentleman aired some of his grievances. We have another letter from this station man which gives an interesting picture of the peddling business in that part of New York as he sees it.

It gives a picture of what must be an unusual situation caused by many years of depression, which in turn resulted in a cat and dog fight for gasoline and oil business in the territory around the Stone Corner Trading Post.

The letter head on which our friend writes us has an illustration at the top showing his place of business. It is a good modern stone station building.

STONE CORNER TRADING POST
The best spot on Highway to buy dependable (none better)
Gasoline & Motor Oil—Not a Slave Station but a place of business.
ROUTE 104, WOLCOTT, N. Y.

It seems that around his neck of the woods there is a lot of funny business going on. For one thing, he tells us that there is a peddler selling so called *American* gasoline. This is one of the brands that this operator sells at his own station. But he says this peddled gasoline doesn't smell like the kind he sells. This operator tells us he buys *American* gasoline in transport loads of 2025 to 4460 gallons, and *Esso* in 3812 gallon transport loads.

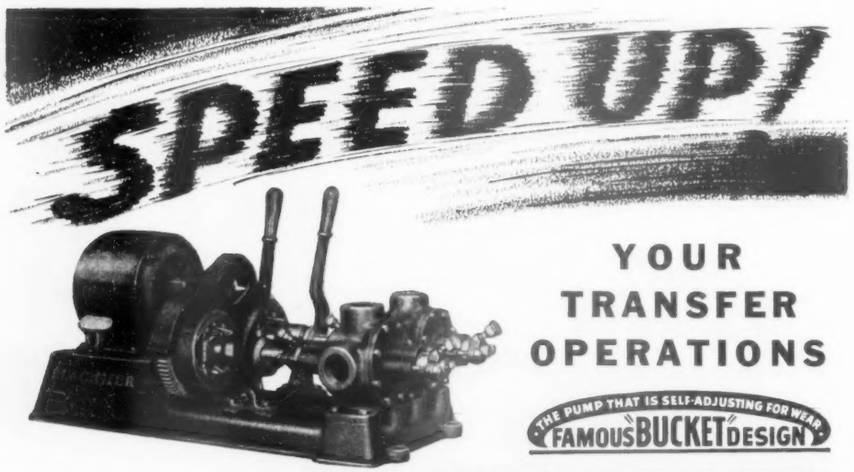
This correspondent tells us that he has been writing the *New York Times*, sending copies to *Readers Digest*, in order to try and break up the "deplorable" situation in this town of 1420 people.

He tells us that there are 16 retail gasoline places in the corporate limits, and 2 or 3 on the edge of town. On top of that are several chain stores and auto accessory places selling oil in 2-gal. cans.

As far as public business is concerned, it's out for the writer. For the electric light company buys in tank cars; the school from Gulf commission agent; state equipment is served with Socony-Vacuum; the creamery buys from Gulf, and the canning factory splits with Gulf and Socony. And then there is a Montgomery Ward peddler selling some of these customers tires, while the road superintendent buys from Socony and Gulf, and gets his tires from other than gasoline dealers in the village.

But the thing that is getting in this station man's hair seems to be the peddlers. He enclosed a couple of advertising combs to emphasize this point. ((See illustration.)

It seems from this letter that there are at least 7 major companies supplying gasoline to peddlers who in turn sell from 5 gallons up around the Wolcott territory. Apparently there are also some other trucks with no identification marks. This correspondent tells us that one major oil company commission agent sells to old established customers at 2c off, though they have two 100% dealers in the town. Two other major companies


SPEED UP!
YOUR TRANSFER OPERATIONS
THE PUMP THAT IS SELF-ADJUSTING FOR WEAR
FAMOUS "BUCKET" DESIGN
SINGLE Units
MULTIPLE Units
DUPLEX, TRIPLEX, QUADS
Capacities Up To 700 GPM Per Pump
BLACKMER
• ROTARY •
PUMPS
Cut loading and unloading time with these dependable pumps.
Proved by 30 years of service in the petroleum industry. Write for bulletins.
BLACKMER PUMP COMPANY
1889 Century Avenue, S.W., Grand Rapids, Michigan

are mentioned as giving 100% farmer accounts 4c off. There seems to be considerable mix up on territories, different peddlers of the same major companies covering the same territory. It is the opinion of this letter writer that more peddlers are to be established, and sell in as little as 5-gal. lots house-to-house. One peddler is mentioned as getting his gasoline out of Syracuse, while the distributor of this same brand in the territory knows nothing about the deal.

War conditions should result in cutting out or reducing a lot of these wasteful and unnecessary competitive practices. However, it is but natural that many people, because of 12 years of depression, would get in the oil business.

If peddlers all over New York are organized as this operator pictures them in his territory, it wouldn't be surprising to see many independent station men do what this independent dealer implies in his letter that he might do. He says:

"We believe in being honest and do not sanction any sharp practices, but we cannot forget on the other hand that self preservation is the first law of nature. And when honest people have been crowded and squeezed beyond their capacity, they may throw up the sponge."

* * *

Farm Business

If and when there is more drastic curtailment of petroleum products, regardless of what might happen, preferences will doubtless always be given on farm machinery and farm trucks. Those marketers who in the past have been selling a large number of small roadside accounts, and perhaps opening some new ones up if they looked promising, find many of them closed and changing times gradually relegating the small outlets to the limbo of things that used to be.

As a result, more interest is being displayed in the farm business—even though there are some headaches connected with it. Even with the equipment it is necessary to furnish a farm account, many marketers say it is a better investment than providing equipment for many small dealer accounts. Here is the way one company sizes it up:

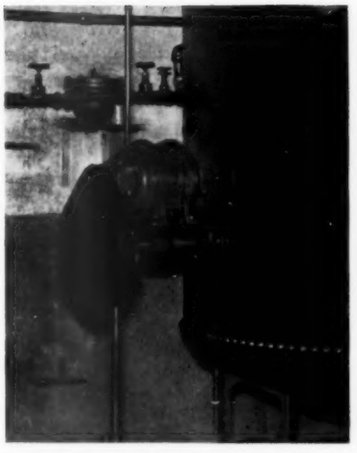
Normal jobber gross margin on gasoline sold to dealers 2c gal.
Normal jobber gross margin on gasoline sold to consumers ..... 3½c gal.

There are many small country dealers whose gallonage does not run over 10,000 gals. a year—850 gals. a month, or $17 a month gross.

The average country farmer with a tractor and car or truck will use 2000 gals. of gasoline a year—170 gals. a month, or at a margin of 3½c —$5.95 gross profit a month.

Any marketer will concede that it is easier to get 3 consumer accounts than one dealer account. The gross margin on these 3 consumer accounts would be $17.50. But these 3 farmer

WHAT "MAKE-SHIFTS" WILL BE NECESSARY THIS WINTER TO KEEP CUSTOMERS SATISFIED?



ABOUT the only thing you can be sure of this winter is that it's going to be tough—and that it will take all of your ingenuity to keep your customers reasonably satisfied and happy.

YOUR BIG PROBLEM WILL BE TO MAKE WHAT YOU CAN GET TO FIT AS CLOSELY AS YOU CAN TO WHAT CUSTOMERS WANT.

That's where "LIGHTNIN" Mixers can help you—with the proper mixers you can blend fuel oils, lube stocks, and gasoline yourself to fit customers requirements. You are not dependent on outside suppliers who may or may not be able to supply the grades you order when you want them.

It's important that you get your order to us at once so that we can make prompt deliveries. Our long experience in the refinery field enables us to recommend the model best suited for your needs on the basis of an inquiry from you telling us what products, grades and quantities you desire handled. Send the coupon below along with your letter.

"LIGHTNIN" MIXERS ALSO RECOMMENDED FOR LUBE OILS — SPECIALTIES — GASOLINE BLENDING, ETC.

MIXING EQUIPMENT COMPANY, INC.
1033 GARSON AVE., ROCHESTER, N.Y.

Mixing Equipment Company, Inc.
1033 Garson Ave., Rochester, N. Y.
Please send me:
..... B-66—Side Entering Mixers—for large tanks.
..... B-68—Pressure Vessel—continuous or batch.
..... B-65—Portable Clamp on Mixer.
For executives and engineers in authority.
..... Complete Refinery Catalog Binder.

Name .....
Title .....
Company .....
Address .....

GOODHOPE is good news for oil men !

ONLY GENERAL AMERICAN GIVES ALL THESE ADVANTAGES:

1. NO CONTAMINATION. Separate pumps, lines, storage zones for dissimilar commodities.
2. MODERN PROTECTION. Latest safety appliances; lowest insurance rates, minimum evaporation losses.
3. RELIABLE CUSTODIANSHIP. Our warehouse receipts are highest type of collateral everywhere.
4. INDEPENDENT OWNERSHIP. Strictest privacy; we do not buy, sell or refine any commodities.
5. NO WHARFAGE. There is no wharfage charge at our own private docks.
6. SPEED WITH SAFETY. Day and night crews, complete facilities, eliminate all shipping delays.
7. WORLD'S LARGEST TANK CAR FLEET. One car or hundreds, wherever and whenever needed.

Goodhope Terminal at New Orleans saves countless dollars and untold headaches for bulk liquid shippers. This huge plant—the world's most complete public terminal—handles any commodity that will flow through a pipe line, with the *speed* and *safety* for which General American Terminals are famous. You get 7 exclusive benefits at our strategically located terminals. Get the facts!

Strategically located to serve you!

GATX GENERAL AMERICAN

GENERAL AMERICAN TANK STORAGE TERMINALS

Goodhope, La. and Westwego, La., (Port of New Orleans)
Corpus Christi, Texas
Carteret, N. J. (Port of New York) Galena Park, Texas (Port of Houston)

A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

accounts will buy more other petroleum and allied lines by far than the average small dealer who buys a little here and a little there.

One company's survey made on the farm business—the figures are conservative compared with Ethyl Gasoline Corporation figures for instance—showed that the average farmer in that territory bought in one year approximately:

800 to 1200 gals. gasoline as fuel for his tractor
300-600 gals. gasoline per car or truck
40 lbs. grease
70 pounds transmission and differential lubricants
10-20 gals. kerosine
40 gals. of motor oil.

In addition farmers are big buyers of tires, accessories and everything else sold to a dealer, plus such items as stock spray and the like.

Marketers considering the farm business can use the above figures and multiply them by the number of farms with tractors in their territory and have a picture of the potential farm business.

Successful marketers in the farm business say that credit losses can be held to a minimum; that profit is sufficient to justify tieing up necessary amount in accounts receivable; that usually extra delivery equipment is not necessary; that proper service can be rendered without increasing overhead and that too much money does not have to be tied up in pump and tank equipment.

Harry S. Pell Dies

Harry S. Pell, 53, sales manager of Erie Meter Systems, Inc., Erie, Pa., died Aug. 24 at his summer home in Mooreheadville, Pa. He had been in ill health since March of this year.

Formerly eastern manager in New York for Erie Meter, Mr. Pell was transferred to Erie, Pa., in 1937. He joined Erie after being sales manager of the Sharpsville Boiler Works at Sharpsville, Pa.

Mr. Pell leaves his wife, Nellie B. Gair Pell and 2 sons, Mark Pell, Erie, and Harry S. Pell, Jr., Fort Bragg, N. C.

MARKETS

Mid-Western

CHICAGO, Aug. 30—Heavy pre-holiday demand for gasoline was reported by refiners and tank car marketers in Chicago the past week. Most suppliers said supplies were "extremely scarce". One marketer reported inquiry for 20 cars 80-82 oct. Ethyl with instructions to ship "whenever material becomes available". Quotations were unchanged.

Open spot sales reported by 4 marketers during the week were: 10 cars 80-82 oct. Ethyl at 6.375c; 15 cars 72-74 oct. at 5.875c; 7 cars 60 oct. & below, 3 cars at 5.125c, and 4 cars at 5.25c; 8 cars 41-43 kerosine at 3.625c; and 2 cars No. 2 straw fuel at 3.125c, FOB Group 3.

One refiner quoted 7.4c for 80-82 oct., and refiners' quotations ranged 6 to 6.375c for 72-74 oct., 5.2 to 5.625c for 60 oct. & below, 4.375 to 4.75c for 41-43 kerosine, and 3.375 to 3.6c for No. 2 straw, FOB Group 3.

Marketers' Group 3 quotations ranged from 6.125 to 6.5c, 5.75 to 6c, 5.125 to 5.25c, 3.625 to 4.125c, and 2.875 to 3.5c, for the 5 products, respectively.

Marketers also sold 1 car No. 2 straw fuel at 5c, FOB Chicago district refinery; 2 cars No. 2 gas oil at 5.25c, delivered Chicago; and 5 cars Bunker "C" fuel oil at 4.28c, delivered Chicago.

Gulf

NEW YORK, Aug. 30 — Advanced quotations for gasoline were reported by some Gulf refiners following a cargo sale at 6.5c the middle of the past week.

Sale reported at 6.5c was of 80,000 bbls. of 81 oct. (research) for Septem ber lifting, coastwise. Refiner had been offering the material as 68 oct. (ASTM) unleaded or min. 80 oct. (research) and said he was now sold up to October.

Two inquiries, one for 80,000 bbls., one for 100,000 bbls. of min. 80 oct. were reported, both for September, coastwise. Refiners' quotations ranged from 6.25 to 6.5c.

Other gasoline inquiries reported by refiners were for 80,000 bbls. of 74-76 oct. (ASTM), 400 e.p. leaded and "what you can supply" of 74 oct. (ASTM) and 81 oct. (research), all for September lifting, coastwise.

Quotations for 68 and 70 oct. unleaded gasoline were 0.25c higher at 6.25 to 6.625c and 6.25 to 6.5c, respectively.

Two inquiries for 80,000 bbls. of No. 2 fuel for September lifting, coastwise, and one for 100,000 bbls. a month over the next 12 months were reported in the market. Quotations ranged from 3.5c to 3.875c.

One refiner withdrew from the market on kerosine and No. 2 fuel to hold for "higher prices," and said: "We think we will get our cost out of them eventually."

Mid-Continent

TULSA, Aug. 30.—Prices for bright stock were up 1 to 2c in the Mid-Continent the past week. Three refiners said advanced quotations reflected increased demand and diminishing stocks. Most refiners were limiting shipments to regular customers.

Quotations for 150-160 vis. D bright ranged 22 to 22.5c, 21.5 to 22c, for 0.10 and 10-25 pour, respectively, with one refiner quoting 22c for 25-40 pour; for 150-160 vis. E, 21 to 21.5c; for 120 vis. D, 21 to 21.5c and one refiner quoted 26c for 200 vis. D 10-25 pour. Neutrals also were quoted higher.

Grade 26-70 natural gasoline was 0.125c higher FOB Breckenridge and Group 3 at 3.75c and 4.125c, respectively. Open spot sales of one or more cars were reported daily on both freight bases. Demand continued heavy; supplies tight.

Oklahoma refiner quoted 6.75c for 80-82 oct. Ethyl, reported stock position "forced" 0.25c advance. Quotations of 3 others were unchanged, ranging up to 7.25c. No changes in quotations for other grades refined gasoline were reported.

Demand for refined gasoline still was heavy, with large bookings reported for pre-Labor Day shipment. "A market like this is the kind you dream of," a refiner commented. Refiners from Kansas to Texas reported turning down inquiries from "casual" open spot buyers, said this type of buyer was having difficulty securing sufficient supplies. Oklahoma refiner was 5-6 days behind on orders despite daily purchases which he said averaged 5 cars each of 80-82 oct. Ethyl and 60 oct. & below, 15 cars 72-74 oct.

California

LOS ANGELES, Aug. 30 — Gasoline quotations for all octane ratings above 65 advanced 0.125 to 0.375c on west coast export markets the past week. In extent and volume, the most important increases were for 375 e.p. blend, 70 octane and 390 e.p. blend, 68 octane, which advanced 0.375c to ranges of 6.375 to 6.5c, and 6.25 to 6.375c, respectively.

Rack prices of third grade gasoline at independent refineries in the Los Angeles Basin generally ranged from 5.5 to 6c, with small quantities offered at 5.25c. Delivered prices on leaded and Ethyl grades ranged from 6 to 7c, and from 7 to 8.75c, respectively.

Fuel oil quotations in the San Joaquin Valley ranged from $0.75 to $0.85 per bbl., with only limited quantities offered at the lower figure. In the Basin, cracked oil was quoted from $0.70 to $0.75, and straight run from $0.70 to $0.80 per bbl.

Pennsylvania

CLEVELAND, Aug. 30 — Continued heavy demand for all products, with activity centering on cylinder stocks and wax, was reported by western Penna. refiners the last week in August. Wax was up 0.125c but prices for other products for most part were unchanged.

Crude scale wax was "tight". A small lot sold at 5.4c, New York, and quotations were up 0.125c at 5.375 to 5.5c, New York. Some refiners were sold up for 30 to 60 days.

"Substantial blocks" of bright stock sold inter-refinery at 28c, with quotations ranging from 25 to 28c for 25 pour test. Three refiners quoted 25c.

Inter-refinery sales of 45 w.w. kerosine were reported from the lower field at 6c—one lot of 15 cars, and another of "7 or 8 cars"; quotations ranged from 6 to 6.5c.

Atlantic Coast

NEW YORK, Aug. 30. — Kerosine and light fuels were priced higher at Philadelphia the past week, with quotations at other points along the eastern seaboard generally unchanged. Demand for all products continued heavy and supplies "tight". Many suppliers said they were refusing new business and limiting sales to their regular customers only.

Quotations for kerosine reported by Philadelphia suppliers were up 0.15c at 5.4 to 5.8c, while Nos. 2 and 3 fuels at that point were reported 0.2c higher at 5.2 to 5.25c.

Suppliers at New Orleans reported quotations of 6.75 to 7.37c for min. 80 oct. (research) gasoline, 6.25 to 6.75c for 72-74 oct., 4.25 to 4.625c for kerosine, and 3.75 to 4c for No. 2 fuel.

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy time of transmission or promptness of delivery.

The subscriber receives this information for his private use and not for resale or further distribution.

Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "Inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test: and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads.

Summary of Daily Gasoline Prices (Aug. 26 to Sept. 2)

U. S. Motor, (ASTM octane)	Tuesday Sept. 2	Friday Aug. 29	Thursday Aug. 28	Wednesday Aug. 27	Tuesday Aug. 26
80-82 octane Ethyl:					
Oklahoma	6.75 – 7.25	6.75 – 7.25	6.75 – 7.25	6.75 – 7.25	6.5 – 7.25
Mid-Western (Group 3 basis)	7.4 (1)	7.4 (1)	7.4 (1)	7.4 (1)	7.4 (1)
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	7 (2)	7 (2)	7 (2)	7 (2)	7 (2)
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	7.125 (1)	7.125 (1)	7.125 (1)	7.125 (1)	7.125 (1)
72-74 octane:					
Oklahoma	6 – 6.375	6 – 6.375	6 – 6.375	6 – 6.375	6 – 6.375
Mid-Western (Group 3 basis)	6 – 6.375	6 – 6.375	6 – 6.375	6 – 6.375	6 – 6.375
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6 – 6.5	6 – 6.5	6 – 6.5	6 – 6.5	6 – 6.5
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	6 –6.125 (2)	6 –6.125 (2)	6 –6.125 (2)	6 –6.125 (2)	6 –6.125 (2)
63-66 octane:					
Oklahoma	5.625– 6	5.625– 6	5.625– 6	5.625– 6	5.625– 6
Mid-Western (Group 3 basis)	5.6 – 6	5.6 – 6	5.6 – 6	5.6 – 6	5.6 – 6
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.625– 6.125	5.625– 6.125	5.625– 6.125	5.625– 6.125	5.625–6.125
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.625–5.75 (2)	5.625–5.75 (2)	5.625–5.75 (2)	5.625–5.75 (2)	5.625–5.75 (2)
60 octane & below:					
Oklahoma	5.25 – 5.625	5.25 – 5.625	5.25 – 5.625	5.25 – 5.625	5.25 – 5.625
Mid-Western (Group 3 basis)	5.2 – 5.625	5.2 – 5.625	5.2 – 5.625	5.2 – 5.625	5.2 – 5.625
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75	5.25 – 5.75
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	5.25–5.375 (2)	5.25–5.375 (2)	5.25–5.375 (2)	5.25–5.375 (2)	5.25–5.375 (2)
Motor Gasoline, 72-74 octane (ASTM)					
New York harbor	8 – 8.5	8 – 8.5	8 – 8.5	8 – 8.5	8 – 8.5
New York harbor, barges	7.75 – 8.5	7.75 – 8.5	7.75 – 8.5	7.75 – 8.5	7.75 – 8.5
Philadelphia district	8 – 8.25	8 – 8.25	8 – 8.25	8 – 8.25	8 – 8.25
Baltimore district	7.75–8.25 (2)	7.75–8.25 (2)	7.75–8.25 (2)	7.75–8.25 (2)	7.75–8.25 (2)
Motor Gasoline:					
Western Penna. Bradford-Warren:					
Min. 80 Oct. ('39 Research)	8 (2)	8 (2)	8 (2)	8 (2)	8 (2)
74-76 Oct. (ASTM)	7.75 (1)	7.75 (1)	7.75 (1)	7.75 (1)	7.75 (1)
74-76 Oct. (L-3)	7.5–7.75 (2)	7.5–7.75 (2)	7.5 –7.75 (2)	7.5 –7.75 (2)	7.5–7.75 (2)
Western Penna. Other Districts:					
Min. 80 Oct. ('39 Research)	8 (1)	8 (1)	8 (1)	8 (1)	8 (1)
74-76 Oct. (ASTM)	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
74-76 Oct. (L-3)	7.25–7.5 (2)	7.25–7.5 (2)	7.25–7.5 (2)	7.25–7.5 (2)	7.25–7.5 (2)

REFINERY PRICES

Gasoline—U. S. Motor (ASTM Octane) except where otherwise specified

Prices Effective	Sept. 2	Aug. 25
OKLAHOMA		
80-82 oct. Ethyl	6.75 – 7.25	6.5 – 7.25
72-74 oct.	6 – 6.375	6 – 6.375
63-66 oct.	5.625– 6	5.625– 6
60 oct. & below	5.25 – 5.625	5.25 – 5.625
60-62 400 e.p.	5.375 (1)	5.375 (1)
MID-WESTERN (Group 3 basis)		
80-82 oct. Ethyl	7.4 (1)	7.4 (1)
72-74 oct.	6 – 6.375	6 – 6.375
63-66 oct.	5.6 – 6	5.6 – 6
60 oct. & below	5.2 – 5.625	5.2 – 5.625
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
80-82 oct. Ethyl	7 (2)	7 (2)
72-74 oct.	6 – 6.5	6 – 6.5
63-66 oct.	5.625– 6.125	5.625– 6.125
60 oct. & below	5.25 – 5.75	5.25 – 5.75
60-62, 400 e.p.	5.375–5.5 (1)	5.375–5.5 (1)
W. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
80-82 oct. Ethyl	7.125 (1)	7.125 (1)
72-74 oct.	6–6.125 (2)	6 –6.125 (2)
63-66 oct.	5.625–5.75 (2)	5.625–5.75 (2)
60 oct. & below	5.25–5.375 (2)	5.25–5.375 (2)
CENT. W. TEX. (Prices to truck transports)		
80 oct. & above	7.125 (2)	7.125 (2)
72-74 oct.	6.125 (2)	6.125 (2)
67-69 oct.	5.625 (2)	5.625 (2)
62 oct. & below	5.375 (2)	5.375 (2)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
60 oct. & below	5.25–5.5 (2)	5.25–5.5 (2)
60-62, 400 e.p.	5.375–5.625 (1)	5.375–5.625(1)

Prices Effective	Sept. 2	Aug. 25
KANSAS (For Kansas destinations only)		
80-82 oct. Ethyl	7.5 (1)	7.5 (1)
72-74 oct.	6.3 – 6.375	6.3 – 6.375
63-66 oct.	5.9 – 6	5.9 – 6
60 oct. & below	5.5 – 5.625	5.5 – 5.625
ARK. (For shipment to Ark. & La.)		
72-74 oct.	6 (1)	6 (1)
70-72 oct.	5.875 (1)	5.875 (1)
60 oct. & below	5.5 (1)	5.5 (1)
WESTERN PENNA. (Motor gasoline.)		
Bradford-Warren:		
Min. 80 oct. ('39 research)	8 (2)	8 (2)
74-76 oct. (ASTM)	7.75 (1)	7.75 (1)
74-76 oct. (L-3)	7.5–7.75 (2)	7.5–7.75 (2)
Other districts:		
Min. 80 oct. ('39 research)	8 (1)	8 (1)
74-76 oct. (ASTM)	7.25 – 7.75	7.25 – 7.75
74-76 oct. (L-3)	7.25–7.5 (2)	7.25–7.5 (2)
CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group)		
U.S. Motor: (Oct. L-3):		
72-74 oct.	8.5	8.5
67-69 oct.	7.7 – 7.75	7.7 – 7.75
Str. run gasoline, excluding Detroit shpt.	6 – 6.25	6 – 6.25
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	8.375	8.375
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	7 – 7.5	7 – 7.25
54-58 grav., for outside state shipment	6 – 6.75	6 – 6.75
54-58 grav., for instate shipment	5.5 – 6	5.5 – 6

Kerosine, Gas & Fuel Oils

Prices Effective	Sept. 2	Aug. 25
OKLAHOMA		
41-43 grav. w.w.	4.375– 4.75	4.375– 4.75
42-44 grav., w.w.	4.5 – 4.875	4.5 – 4.875
Range Oil	4 – 4.375	4 – 4.375
No. 1 P.W.	3.875– 4.25	3.875– 4.25
No. 1 straw	3.5–4.25 (2)	3.5–4.25 (2)
No. 2 straw	3.5 – 4.125	3.5 – 4.125
U.G.I. gas oil	No Price	No Price
No. 3 fuel	3.375– 3.625	3.375– 3.625
No. 6 fuel	$0.80-$0.85 (2)	$0.80-$0.85 (2)
14-16 fuel	$0.95 (2)	$0.95 (2)
MID-WESTERN (Group 3 basis)		
41-43 grav. w.w.	4.375– 4.75	4.375– 4.75
42-44 grav. w.w.	4.5 – 4.875	4.5 – 4.875
Range Oil	4 – 4.2 (2)	4 – 4.2 (2)
No. 1 p.w.	3.75 – 4.125	3.75 – 4.125
No. 2 straw	3.375– 3.6	3.375– 3.6
No. 3	3.25 – 3.5	3.25 – 3.5
No. 5	$0.85 (1)	$0.85 (1)
No. 6	$0.85-$0.875 (2)	$0.85-$0.875(2)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
41-43 grav. w.w.	4 – 4.875	4 – 4.875
No. 1 P.W.	4.125–4.375 (1)	4.125–4.375 (1)
AMARILLO, TEX. (For shpt. to W. Okla. & Tex. differential territory.)		
41-43 grav. w.w.	4.75 (2)	4.75 (2)
No. 1 straw	4.3 (1)	4.3 (1)
KANSAS (For Kansas destinations only)		
41-43 grav. w.w.	4.6 (1)	4.6 (1)
42-44 gravity w.w.	4.7 – 4.875	4.7 – 4.875
No. 1 p.w.	4.1 – 4.3 (2)	4.1 – 4.3 (2)
No. 6 fuel	$0.85-$0.925 (2)	$0.85-$0.925 (2)

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads.

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	Sept. 2	Aug. 25
ARK. (For shipment to Ark. and La.)		
41-43 grav. w.w.	4.625 (1)	4.625 (1)
No. 1	4 (1)	4 (1)
No. 2	3.375 (1)	3.375 (1)
No. 3 fuel	3.375 (1)	3.375 (1)
Tractor fuel, for shpt. to Ark. points only	5.125 (1)	5.125 (1)
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	6 – 6.25	6 – 6.25
46 grav. w.w.	6.25 (1)	6.25 (1)
No. 1 fuel	6.25 (1)	6.25 (1)
No. 2 "	6 –6.25 (2)	6 –6.25 (2)
No. 3 "	6.25 (1)	6.25 (1)
36-40 gravity	6.25 (1)	6.25 (1)
Other districts:		
45 grav. w.w.	6 – 6.5	6 – 6.5
46 grav. w.w.	6.125– 6.625	6.125– 6.625
47 grav. w.w.	6.25 – 6.625	6.25 – 6.625
No. 1 fuel	5.875– 6.25	5.875– 6.25
No. 2 "	5.875– 6.375	5.875– 6.375
No. 3 "	5.875– 6.25	5.875– 6.25
36-40 grav., Pittsburgh dist. prices excluded	5.875– 6.25	5.875– 6.25
CENTRAL MICHIGAN (FOB Central Mich. refinery group basis for shpt. within Mich.; shpts. may originate at plants outside Central group.)		
47-49 gravity w.w.	6 – 6.375	6 – 6.375
P.W. Distillate	5.5 – 6	5.5 – 6
No. 3 gas oil, Straw	5 – 5.8	5 – 5.8
U.G.I. gas oil	4.5 – 4.875	4.5 – 4.875
Fuel Oils (Vis. at 100).		
300-500 Vis.	4 –4.25 (2)	4 –4.25 (2)
100-300 Vis.	4.5 (1)	4.5 (1)
OHIO (S. O. Ohio quotations for statewide delivery)		
Kerosine	6.5	6.5
CALIFORNIA		
40-43 grav. w.w.	4.5 – 6	4.5 – 6
San Joaquin Valley:		
Heavy fuel	$0.70 –$0.85	$0.70 –$0.85
Light fuel	$0.75 –$0.85	$0.75 –$0.85
Diesel fuel	2.75 – 4	2.75 – 4
Stove dist.	2.75 – 4	2.75 – 4
Los Angeles:		
Heavy fuel	$0.60 –$0.75	$0.60 –$0.75
Light fuel	$0.72 –$0.80	$0.72 –$0.80
Diesel fuel	2.75 – 4	2.75 – 4
Stove dist.	2.75 – 4	2.75 – 4
San Francisco:		
Heavy fuel	$0.85	$0.80
Light fuel	$0.90	$0.90
Diesel fuel	4.5	4.5
Stove dist.	5.5	5.5

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Lubricating Oils

WESTERN PENNA.

Prices are for sales made, or offers reliably reported, to jobbers & compounders only.

*Viscous*Neutrals—No. 3 col. Vis. at 70°F*

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	40.5 (1)	40.5 (1)
10 p.t.	39.5 (1)	39.5 (1)
15 p.t.	38.5 (1)	38.5 (1)
25 p.t.	33–37	33–37
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	38.5 (1)	38.5 (1)
10 p.t.	37.5 (1)	37.5 (1)
15 p.t.	36.5 (1)	36.5 (1)
25 p.t.	31–35	31–35
Cylinder Stocks		
Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.		
10 p.t.	29.5 (1)	29.5 (1)
15 p.t.	28.5 (1)	28.5 (1)
25 p.t.	25–28	25–28
600 S.R. filterable	14–16	14–16
650 S.R.	14.5–16.5	14.5–16.5
600 fl.	15–17	15–17
630 fl.	16–17.5	16–17.5

MID-CONTINENT (F. o. b. Tulsa)

Neutral Oils (Vis. at 100° F. 0 to 10 P.P.)

Pale Oils: Vis. Color		
60- 85—No. 2	7.25 – 8	7 – 7.5
86-110—No. 2	7.75– 8.25	7.5 – 7.75
150—No. 3	13.25–13.5	12.5–12.75
180—No. 3	13.5–14	13
200—No. 3	14 –14.5	13–13.5
250—No. 3	15 –15.5	14–14.5
280—No. 3	16 –16.75	15–16.25
300—No. 3	17 –17.5	16–16.75

Lubricating Oils (Cont'd)

Prices Effective	Sept. 2	Aug. 25
Red Oils:		
180—No. 5	14 (1)	13 (1)
200—No. 5	14 –14.5 (2)	13–13.5 (2)
280—No. 5	16.5 (1)	15.5 (1)
300—No. 5	16.5–17.5	15.5–16.5

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stock—Vis. at 210°		
200 Vis. D	26 (1)	25 (1)
150-160 Vis. D:		
0 to 10 p.p.	22–22.5	21–22
10 to 25 p.p.	21.5–22	20.5–21.5
25 to 40 p.p.	22 (1)	20 (1)
150-160 vis. E	21 –21.5	20–20.5
120 Vis. D:		
0 to 10 p.p.	21 –21.5	20–20.5
600 S.R. Dark Green	8.5 –9 (2)	8.5 (2)
600 S.R. Olive Green	10 –10.5	9.5–10
631 S.R.	18.5 (1)	17.5 (1)
Black Oil	4–5.5 (2)	4–5.5 (2)

SOUTH TEXAS Neutral Oils

Vis. Color		
Pale Oils: (*Vis. at 100°F*		
100 No. 1½-2½	6.5	6.5
200 No. 2-3	8.75	8.75
300 No. 2-3	9.25	9.25
500 No. 2½-3½	10	10
750 No. 3-4	10.25	10.25
1200 No. 3-4	10.375	10.375
2000 No. 4	10.5	10.5
Red Oils:		
100 No. 5-6	6.5 (2)	6.5 (2)
200 No. 5-6	8.75	8.75
300 No. 5-6	9.25	9.25
500 No. 5-6	10	10
750 No. 5-6	10.25	10.25
1200 No. 5-6	10.375	10.375
2000 No. 5-6	10.5–11.5	10.5–11.5

CHICAGO (From Mid-Continent p.l. crude.)

Neutral oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils Vis. Color		
60-85—No. 2	9 (1)	8.75 (1)
86-110—No. 2	9.5 (1)	9.25 (1)
150—No. 3	14.5 (1)	13.5 (1)
180—No. 3	15 (1)	14 (1)
200—No. 3	15 (1)	14 (1)
250—No. 3	16 (1)	15 (1)
Red Oils:		
180—No. 5	15 (1)	14 (1)
200—No. 5	15 (1)	14 (1)
250—No. 5	16 (1)	15 (1)
280—No. 5	17.5 (1)	16.5 (1)
300—No. 5	17.5 (1)	16.5 (1)

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)		
140	11 (1)	11 (1)
160	12 (1)	12 (1)
200	13 (1)	13 (1)
Bright stocks, 160 vis. at 210 No. 8 color:		
0 to 10 p.p.	23 (1)	22 (1)
15 to 25 p.p.	22.5 (1)	21.5 (1)
30 to 40 p.p.	20.75 (1)	19.75 (1)
E filtered Cyl. Stock	15 (1)	15 (1)

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3		
Grade 26-70	4.25 (Sales)	4.125 (Sales)
FOB BRECKENRIDGE		
Grade 26-70	3.875 (Sales)	3.75 (Sales)
CALIFORNIA (FOB plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	4.75 – 5.25	4.75 – 5.25

Naphtha and Solvent

Prices Effective	Sept. 2	Aug. 25
(FOB Group 3)		
Stoddard solvent	6.625	6.625
Cleaners' naphtha	7.125	7.125
V. M. & P. naphtha	7.125	7.125
Mineral spirits	6.125	6.125
Rubber solvent	7.125	7.125
Lacquer diluent	7.375– 8.125	7.375– 8.125
Benzol Diluent	7.875– 8.625	7.875– 8.625
WESTERN PENNA		
Untreated naphtha	6.75 – 7.25	6.5 – 7.25
Stoddard solvent	7 – 7.5	7 – 7.5

OHIO (S. O. Ohio quotations for statewide delivery):

V.M.&P. naphtha, D.C. naphtha, Varnelene & Sohio solvent	10	10
Rubber solvent	9	9

Wax

White Crude Scale:

WESTERN PENNA. (Bbls. C.L., N. Y.)		
122-124 A.m.p.	5.375– 5.5	5.25 – 5.5
124-126 A.m.p.	5.375– 5.5	5.25 – 5.5
OKLAHOMA (Bbls. or burlap bags, C.L.)		
124-6 AMP	5.25 (1)	5.25 (1)
131-3 AMP	5.375 (1)	5.375 (1)

CHICAGO (FOB Chicago district refinery of one refiner, in bags or slabs loose, carloads. Melting points are EMP (ASTM) methods: add 3° F. to convert into AMP.)

Fully refined:		
122-124 (bags only)	5.9	5.9
125-127	5.9	5.9
127-129	6.15	6.15
130-132	6.85	6.85
132-134	7.1	7.1
135-137	7.85	7.85

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)

Snow White	6.125– 7	6.125– 7
Lily White	5.375– 6	5.375– 6
Cream White	4.375– 5	4.375– 5
Light Amber	3.375– 3.875	3.375– 3.875
Amber	3.125– 3.5	3.125– 3.5
Red	3 – 3.25	3 – 3.25

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline Kerosine Cents per Cwt.	Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Cents per gal. 7.4 lbs.
Chicago, Ill.	36	2.376	32	2.368
Decatur, Ill.	32	2.112	31	2.294
Joliet, Ill.	36	2.376	32	2.368
Peoria, Ill.	33	2.178	31	2.294
Quincy, Ill.	31	2.046	29	2.146
Indianapolis, Ind.	38	2.508	39	2.886
Evansville, Ind.	35	2.310	37	2.738
South Bend, Ind.	44	2.904	**42	**3.108
Detroit, Mich.	64	4.224	51	3.774
Grand Rapids, Mich.	55	3.630	**50	**3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	41	2.706	41	3.034
Milwaukee, Wis.	39	2.574	34.5	2.553
LaCrosse, Wis.	37	2.442	37	2.738
Minneapolis-St. Paul	37	2.442	37	2.738
Duluth, Minn.	41	2.706	41.5	3.071
Mankato, Minn.	37	2.442	37	2.738
Des Moines, Ia.	29	1.914	29	2.146
Davenport, Ia.	33	2.178	31	2.294
Mason City, Ia.	34	2.244	33.5	2.479
St. Louis, Mo.	29	1.914	26.5	1.961
Kansas City, Mo.	22	1.452	22.5	1.665
St. Joseph, Mo.	25	1.650	22.5	1.665
Fargo, N. D.	51	3.366	50.5	3.737
Huron, S. D.	43	2.828	42.5	3.145
Wichita				
From Ponca City	7.5	*0.495	7.5	†0.555
From Tulsa	12.5	*0.825	12.5	†0.925
From Cushing	11	*0.726	11	†0.814

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

NOTICE—Owing to great demand, refiners generally limit quotations to regular customers and refuse bids, though higher, from others. Refiners' prices and sales shown; bids reported in market leads

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators, FOB their terminals)—Prices Effective Sept. 2

MOTOR GASOLINE

District:	Min. 80 Oct. '39 Research (Max. 2 cc. Lead)	72-74 Oct. (ASTM)	68-70 Oct. (ASTM)
N. Y. Harb.	8.5 – 9	8 – 8.5	8 (1)
N. Y. Harb., barges	8.5	7.75 – 8.5	7.75 (1)
Albany	8.1 – 8.8	....	....
Philadelphia	8 – 8.7	8 – 8.25	8 –8.2 (2)
Baltimore	7.75 – 8.5	7.75–8.25 (2)	....
Norfolk	7.5 – 8.5	7.5 –8.25 (2)	7.25 –7.5 (2)
Wilmington, N. C.	7.5 – 8	7.5 (1)	7.25–7.5 (2)
Charleston	7.6 – 7.8	7.5 (1)	6.9 –7.1 (1)
Savannah	7.37 – 7.7	....	7.1 –7.3 (2)
Jacksonville	7.37 – 7.7	7.5 (1)	7.1 –7.3 (2)
Miami	7.37–7.7 (2)	....	7.1 –7.3 (1)
Tampa	7.25 – 7.7	....	7.1 –7.3 (1)
Pensacola	7 –7.2 (1)	....	6.6 –6.8 (1)
Mobile	6.87 – 7.2	....	6.6 –6.8 (1)
New Orleans	6.75 – 7.37	6.25–6.75 (2)	....
Portland	8.3 – 9.4	8.6 (1)	....
Boston	8.2 – 9	8.5 (2)	8.5 (1)
Providence	8.2 – 9.1	8.5 (1)	....

FUEL OILS

	KEROSINE and/or NO. 1 FUEL	No. 2	No. 3	No. 5	No. 6
N. Y. Harb.	5.3 – 5.75	5.2 – 5.5	5.2	$1.65-1.75 (2&a)	$1.35 –$1.50
N. Y. Harb., barges	5.2 – 5.75	5.1 – 5.5	5.1	....	....
Albany	5.5	5.3	5.3	$1.95 (1)	$1.55 (1)
Philadelphia	5.4 – 5.8	5.2 – 5.25	5.2 – 5.25	$1.57 –$1.68	$1.35
Baltimore	5.4 – 5.45	5.2 – 5.25	5.2 – 5.25	$1.57 (1)	$1.35
Norfolk	5.3 – 5.5	5.2 – 5.25	5.2 –5.25 (2)	....	$1.35 (2)
Wilmington, N. C.	5.25 – 5.5	5.2 – 5.25	....	....	....
Charleston	5.3 – 5.5	5.2 (2)	....	....	$1.30 (2)
Savannah	5.25 – 5.5	....	....	....	$1.30 (1)
Jacksonville	5 – 5.5	5 (1)	5 (1)	....	$1.30 (1)
Miami	5.25–5.5 (2)	....	....	....	....
Tampa	5.25 – 5.5	5 (1)	....	....	$1.25 (1)
Pensacola	4.8 – 5 (1)	....	....	....	....
Mobile	4.75 – 5	....	....	....	....
New Orleans	4.25 – 4.625	3.75 – 4 (2)	....	$1.68 (1)	$0.85 (2)
Portland	5.5	5.3	5.3 (2)	$1.95 (1)	$1.35 –$1.55
Boston	5.4	5.2	5.2 (2)	$1.65 (2)	$1.35
Providence	5.4	5.2	5.2	$1.60 –$1.65	$1.35

(a) This price is for a straight-run, low pour test No. 5 fuel.

	Bunker C Fuel Ships' bunkers (Ex Lighterage)	Diesel Oil Ships' bunkers (Ex Lighterage)	Diesel Oil Shore Plants	Gas House Gas Oil 28-34 Gravity
N. Y. Harbor	$1.35 –$1.50	$2.15	5.2 –5.3 (2)	5.3 (2)
Albany	$1.55 (1)	$2.35 (1)	5.3 (2)	5.5 (1)
Philadelphia	$1.35	$2.15	....	....
Baltimore	$1.35	$2.15	5.2 (1)	5.2 (1)
Norfolk	$1.35	$2.15	5.2 (1)	5.2 (1)
Charleston	$1.30	$2.15 (2)	5.2 (1)	5.2 (1)
Savannah	$1.30 (1)	$1.99 (1)	....	....
Jacksonville	$1.30 (2)	$1.99-$1.995 (2)	....	....
Tampa	$1.25 (2)	$1.99-$1.995 (2)	....	....
New Orleans	$0.85 (2)	$1.55 (2)	4 (1)	4 (1)
Portland	$1.35 –$1.55	$2.23 –$2.25	5.3 (1)	5.4 (1)
Boston	$1.35	$2.15 –$2.18	5.2 (2)	5.3 (2)
Providence	$1.35	$2.15 –$2.18	5.2 (1)	5.3 (1)

Wax

(Melting points are AMP, 3° higher than EMP. Export prices FAS c.l. Domestic prices FOB, in bags, c.l. Scale solid; fully refined slabs.)

Prices Effective Sept. 2

Crude Scale:	New Orleans Export	N. Y. Domestic	N. Y. Export
124-6 Yellow	5.375-5.75 (1)	....	5.375-5.75 (1)
122-4 White	....	5.375-5.75	5.375-5.5
124-6 White	5.375-5.75 (2)	5.3-5.75	5.375-5.75
Fully Refined:			
123-5	6.25 (1)	5.6–6.4 (2&a)	6.25 (1)
125-7	6.25 (1)	5.6-6.55(2&a)	6.25 (2)
128-30	6.5 (1)	5.6–6.95	6.5 (2)
130-32	6.75 (1)	5.85–7.2 (2)	6.5-6.75 (2)
133-5	7 (1)	6.15–7.5	7 (2)
135-7	7.25 (1)	6.4 (1)	7-7.25 (2)
108-11 White Match wax (tight bbls.)			6.25 (1)

(a) 0.4c discount generally given for slabs loose.

Naphtha

Prices Effective Sept. 2	V.M.&P. Naphtha	Mineral Spirits
Baltimore	10–10.5 (2)	9 – 9.5
New York Harbor	10 (2)	9–9.5
Philadelphia district	10.5 (2)	9.5
Boston	10.5 (2)	9.8–10
Providence	10.5 (1)	10 (2)

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	Sept. 2	Aug. 25
375 e.p. blend, 70 oct.	6.375– 6.5	6 – 6.375
390 e.p. blend, 68 oct.	6.25 – 6.375	5.875– 6.125
390 e.p. blend, 66 oct.	5.875– 6.125	5.75 – 5.875
400 e.p. blend, 65 oct. min.	5.75 – 6	5.75 – 5.875
U. S. Motor, under 65 octane	5.5 – 5.75	5.5 – 5.75
38-40 grav. w.w. kero., 150 fire point	4.5 – 5	4.5 – 5
41-43 grav., w.w. kero.	4.75 – 5	4.75 – 5
44-grav., w.w. kero.	5 – 5.5	5 – 5.5
Diesel fuel, 24 & above	$1.25 –$1.30	$1.25 –$1.30
Diesel fuel, under 24	$1.15 –$1.25	$1.15 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.25 –$1.35
Grade C fuel, Pac. Spec. 400	$0.85 –$0.90	$0.85 –$0.90
In Ship's Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.85 –$0.90	$0.85 –$0.90
Cased Goods: (Per case)		
375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.50 –$1.60
400 e.p. blend, under 65 oct.	$1.40 –$1.50	$1.40 –$1.50
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
40-43 grav. w.w. kero., 150 fire point	$1.30 –$1.40	$1.30 –$1.40
Kero., p.w.	$1.25 –$1.35	$1.25 –$1.35

Tanker Rates

(Approximate last paid rates, cents per bbl.; Gulf-N. Atlantic, not East of N. Y.)

Hvy. Crude & Fuel (10 to 19.9 gravity)	57
Light Crude, (30 grav. or Lighter)	50
Gasoline	50
Kerosine	53
No. 2 Fuel	57

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf, for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

Prices Effective Sept. 2

Motor Gasoline Domestic	
Min. 80 oct. '39 Research, max. 2cc lead	6.25 – 6.5
60-62, Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	6 – 6.25
70 oct. unleaded " "	6.25 – 6.625
68 oct. " "	6.25 – 6.5
65 oct. " "	5.75 – 6
60 oct. " "	5.5 – 5.75
41-43 w.w. kerosine	3.5 – 4
No. 2 fuel	3.5 – 3.875
Gas Oil—Less than ½ of 1% sulfur.	
Below 43 diesel index	3.5
43-47 " "	3.5
48-52 " "	3.625– 3.7
53-57 " "	3.75
58 & above diesel index	3.875
Diesel Oil, ships' bunkers (ex-lighterage)	$1.55
Bunker C, " " "	$0.85 –$0.95
Bunker C, cargoes	$0.85 –$0.95

Motor Gasoline Export	
60-62 Gravity, Max. 400 e.p.	
72-74 oct. leaded (ASTM)	6 – 6.25
70 oct. unleaded "	6.25 – 6.625
68 oct. "	6.25 – 6.5
65 oct. " "	5.75 – 6
60 oct. " "	5.5 – 5.75
41-43 w.w. kerosine	3.5 – 4
Gas Oil—Less than ½ of 1% sulfur.	
Below 43 diesel index	3.5
43-47 " "	3.5
48-52 " "	3.625– 3.7
53-57 " "	3.75
58 & above diesel index	3.875

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk, FOB terminals)

Sept. 2

	New Steel Drums	Bulk
200 vis. D 210 brt. stock	32.5–34 (2)	27.3–27.8 (2)
150 vis. D 210 brt. stock 0-10 p.p.	28.5–30 (2)	23.3 (2)
10-25 p.p.	28 (1)	22.8 (1)
100 vis. D 210 brt. stock 0-10 p.p.	28 (1)	22.8 (1)
10-25 p.p.	27.5 (1)	22.3 (1)
200 vis. No. 3 col. neutral: 0-10 p.p.	21 (1)	15.8 (1)

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk. exprt. shp., FOB terminals)

Unfiltered Pale Oils: Vis. Color	Sept. 2	Aug. 25
100 No. 3	6.25–6.5 (2)	6.25–6.5 (2)
200 No. 3	7.75–8.75 (2)	7.75–8.75 (2)
300 No. 3	8.25–9.25 (2)	8.25–9.25 (2)
500 No. 3½	9.25–10.25 (2)	9.25–10.25 (2)
750 No. 4	9.75–11 (2)	9.75–11 (2)
1200 No. 4	10.25–11.5 (2)	10.25–11.5 (2)
2000 No. 4	12.5 (1)	12.5 (1)
Red Oils: Vis. Color		
100 No. 5-6	6.5 (1)	6.5 (1)
200 No. 5-6	7.75–8.75 (2)	7.75–8.75 (2)
300 No. 5-6	8.25–9.25 (2)	8.25–9.25 (2)
500 No. 5-6	9.25–10.25 (2)	9.25–10.25 (2)
750 No. 5-6	9.75–11 (2)	9.75–11 (2)
1200 No. 5-6	10.25–11.5 (2)	10.25–11.5 (2)
2000 No. 5-6	11–12.5 (2)	11–12.5 (2)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Sept. 2, 1941 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	8.5	9.5	4.5	7.9
*Newark, N. J.	8.5	9.5	4.5	7.9
Annapolis, Md.	8.35	9.85	5.5	9.7
Baltimore, Md.	7.75	9.25	5.5	8.7
Cumberland, Md.	9.15	10.65	5.5	10.2
Washington, D. C.	8	9.5	3.5	9.2
Danville, Va.	8.95	10.95	6.5	10.45
Norfolk, Va.	7.75	9.75	6.5	10.2
Petersburg, Va.	8.05	10.05	6.5	11.2
Richmond, Va.	8.05	10.05	6.5	11.2
Roanoke, Va.	9.25	11.25	6.5	10.7
Charleston, W. Va.	9.05	11.55	6.5	11.5
Parkersburg, W. Va.	8.35	10.85	6.5	11.2
Wheeling, W. Va.	9.35	10.85	6.5	11.8
Charlotte, N. C.	9.9	11.4	7.5	9.5
Hickory	10.45	11.95	7.5	10.5
Mt. Airy, N. C.	10.3	11.8	7.5	9.7
Raleigh, N. C.	9.65	11.15	7.5	10.5
Salisbury, N. C.	9.95	11.45	7.5	10.9
Charleston, S. C.	7.75	10.25	7.5	....
Columbia, S. C.	8.6	11.1	7.5	....
Spartanburg, S. C.	9.3	11.8	7.5	....

	Mineral Spirits T.W.	V.M.&P. T.W.
Newark, N. J.	12.5	14
Baltimore, Md.	15	....
Washington, D. C.	15	....

Fuel Oils—T.W.	No. 1	No. 2	No. 3
Atlantic City, N. J.	7.9	6.9	6.9
Newark	7.9	7.2	7.2
Annapolis, Md.	....	7.45	....
Baltimore	7.7	7.2	7.2
Washington, D. C.	8.2	7.45	7.45
Norfolk, Va.	7.9	7.2	7.2
Petersburg	8.2	7.2	....
Richmond	8.2	7.2	7.2
Charlotte, N. C.	8.5	8.6	....
Hickory	....	8.2	....
Raleigh	9.5	8.3	....
Charleston, S. C.	....	7.2	....
Columbia	....	8.2	....
Spartanburg	....	9	....

*Effective May 20, '41, minimum retail resale price of 13c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w.

Kerosine—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price: Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)

	Com. Cons. T.W.	Undiv. Dlr. T.W.	Gasoline Taxes
New York City:			
Manhattan & Bronx	8.9	9.4	*5.5
Kings & Queens	8.9	9.4	*5.5
Richmond	8.5	9	5.5
Albany, N. Y.	8.7	9.2	5.5
Binghamton, N. Y.	9.8	10.3	5.5
Buffalo, N. Y.	9	9.5	5.5
Jamestown, N. Y.	9.2	9.7	5.5
Mt. Vernon, N. Y.	8.9	9.4	5.5
Plattsburg, N. Y.	9.8	10.3	5.5
Rochester, N. Y.	9.6	10.1	5.5
Syracuse, N. Y.	9.3	9.8	5.5
Bridgeport, Conn.	8.8	9.3	4.5
Danbury, Conn.	9.3	9.8	4.5
Hartford, Conn.	9.4	9.9	4.5
New Haven, Conn.	8.8	9.3	4.5
Bangor, Me.	9.5	10	5.5
Portland, Me.	9.1	9.6	5.5
Boston, Mass.	8.7	9.2	4.5
Concord, N. H.	10.2	10.7	5.5
Lancaster, N. H.	10.8	11.3	5.5
Manchester, N. H.	10.1	10.6	5.5
Providence, R. I.	8.8	9.3	4.5
Burlington, Vt.	9.7	10.2	5.5
Rutland, Vt.	9.8	10.3	5.5

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y.	11.4	12.6
†New York City	10	11
Rochester, N. Y.	12.2	13.4
Syracuse, N. Y.	13	....
Boston, Mass.	11.5	12
Hartford Conn.	13.3	14.3
Providence, R. I.	12.5	13

	Kerosine Yard	Kerosine TW	Mobilfuel Diesel TC	Mobilfuel Diesel TW	Mobilheat Fuel Yard	Mobilheat Fuel TW
New York:						
Manhat'n & Bronx	5.5	8	....	7.4	5.4	7
Kings & Queens	5.5	8	....	7.4	5.4	7
Richmond	5.5	8	....	7.4	5.4	7
Albany	5.7	7.7	5.5	7.5	5.5	7.2
Binghamton	7.1	9.1	....	8.9	6.9	8.4
Buffalo	6.4	8.4	6.3	8.3	6.3	8
Jamestown	6.9	8.9	....	8.8	6.8	8.2
Mt. Vernon	5.7	8.2	....	7.6	5.6	7.2
Plattsburg	6.3	8.3	....	8.1	6.1	7.6
Rochester	6.9	8.9	6.4	8.4	6.4	7.9
Syracuse	6.7	8.7	6.3	8.3	6.3	7.8
Conn.:						
Bridgeport	5.8	7.8	....	....	5.7	7
Danbury	6.3	8.3	....	....	6	7.3
Hartford	5.9	7.9	....	7.7	5.7	7.2
New Haven	5.6	7.6	....	7.5	5.5	7.1
Maine:						
Bangor	6.1	8.1	5.9	7.9	5.9	7.3
Portland	5.7	8.1	5.5	7.5	5.5	7.2
Mass.:						
Boston	5.8	8	5.6	7.6	5.6	7.2
N. H.:						
Concord	6.6	8.6	....	....	6.7	8.2
Lancaster	7.7	9.7	....	....	7.7	9.2
Manchester	6.7	9	....	....	6.4	7.9
R. I.:						
Providence	5.8	7.8	5.6	7.6	5.6	7.1
Vermont:						
Burlington	6.3	8.3	6	8	6	7.4
Rutland	6.5	8.5	....	8.2	6.2	7.7

*Plus 2% city sales tax computed at time of each sale.

†Prices apply to consumers only in quantities over 1000 gals. annually; for quantities under 1000 gals. annually, add 0.5c per gal.

Discounts: Diesel—On t.w. deliveries, 0.5c for at least 400 gals.; 1c for full tank truck.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial T.C.	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	8.5	9.5	5.5	10.15
Pittsburgh	9	10	5.5	10.5
Allentown	9	10	5.5	10.5
Erie	9	10	5.5	10
Scranton	9	10	5.5	10.5
Altoona	9	10	5.5	10.5
Emporium	9	10	5.5	10.5
Indiana	9	10	5.5	10.5
Uniontown	9	10	5.5	10.5
Harrisburg	9	10	5.5	10.5
Williamsport	9	10	5.5	10.5
Dover, Del.	....	10	5.5	10.5
Wilmington, Del.	....	9.5	5.5	10
Boston, Mass.	....	9.7	4.5	8
Springfield, Mass.	....	10.6	4.5	8.9
Worcester, Mass.	....	10.3	4.5	8.5
Fall River, Mass.	....	9.8	4.5	8.6
Hartford, Conn.	....	10.4	4.5	7.9
New Haven, Conn.	....	9.8	4.5	9
Providence, R. I.	....	9.8	4.5	8.6
Atlantic City, N. J.	....	9.5	4.5	7.8
Camden, N. J.	....	9.5	4.5	7.8
Trenton, N. J.	....	9.5	4.5	7.6
Annapolis, Md.	....	9.85	5.5	8.5
Baltimore, Md.	....	9.25	5.5	7.5
Hagerstown, Md.	....	10.35	5.5	8
Richmond, Va.	....	10.05	6.5	10
Wilmington, N. C.	....	10.35	7.5	9.8
Brunswick, Ga.	....	9.5	7.5	*9
Jacksonville, Fla.	....	9.5	8.5	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa.	10.5	12
Lancaster, Pa.	11.5	13
Pittsburgh, Pa.	12.5	12.5

Fuel Oils—T.W.	1	2	3	5	6
Phila., Pa.	8	7.2	7.2	4.75	3.75
Allentown, Pa.	8.5	7.5	7.5	....	....
Wilmington, Del.	8.00	7.2	7.2	....	....
Springfield, Mass.	8.9	7.6	7.6	....	....
Worcester, Mass.	8.5	7.5	7.5	....	....
Hartford, Conn.	7.9	7.2	7.2	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio††

***Sohio X-70 Gasoline (*Regular Grade*)**

	Consumer T.W.	**Resellers	‡S.S.	Gasoline Taxes	†Kerosine T.W.
Ohio, Statewide	12	10	13.5	5.5	9
Akron	12	9.5	12	5.5	9
Cincinnati	12	9.5	12.5	5.5	9
Cleveland	12	9.5	12.5	5.5	9
Columbus	12	9.5	12.5	5.5	9
Dayton	12	9.5	12.5	5.5	9
Marietta	12	9.5	12.5	5.5	9
Portsmouth	12	9.5	12.5	5.5	9
Toledo	12	9.5	12.5	5.5	9
Youngstown	12	9.5	12.5	5.5	9

Aviation Gasoline—Statewide

	Consumer T.W.	Gasoline Taxes
Sohio Aviation	14.5	5.5
Esso Ethyl Aviation 74 Oct.	15.5	5.5
Esso Ethyl Aviation 80 Oct.	16.5	5.5
Esso Ethyl Aviation 91 Oct.	17.5	5.5
Esso Ethyl Aviation 100 Oct.	24.5	5.5

	†Naphthas—T.W. Statewide	T.W. Lucas County
S. R. Solvent	13.5	13.5
D. C. Naphtha	14.5	14.25
V.M.&P. Naphtha	14.5	14.25
Varnolene	14.5	14.25
Sohio Solvent	14.5	14.25

Fuel Oils—T.W.	No. 1	No. 2	No. 3	No. 4
Ohio, Statewide	8	8	7.5	....
Cleveland	10	10	9.5	7.25

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

**Except authorized agents.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1.5c federal & 4c state tax.

‡Prices at company-operated stations.

††Statewide prices are subject to exceptions other than those shown.

Discounts:

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Fuel Oils—Statewide prices are for t.w. & drum deliveries of 50 gals. or more; prices for deliveries of less than 50 gals. are 0.5c higher. Cleveland Nos. 1, 2, and 3 prices are for bulk deliveries of 5 to 99 gals.; 100 gals. and over are 2c less. Cleveland No. 4 price is for full compartment hose dump only.

Naphthas—to contract consumers off t.w. prices—Statewide: 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c. Lucas County: Less than 50 gals., tank wagon price; 50 to 249 gals., 0.5c; 250 to 499 gals., 1c; 500 gals. or over, 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)
Standard (*Third Grade*)

	†Net Dealer Crown	Standard	Gasoline Taxes	Kerosine T.W.
Covington, Ky.	8.5	7.5	6.5	9
Lexington, Ky.	10.5	9.5	6.5	9
Louisville, Ky.	10	9	6.5	8.5
Paducah, Ky.	10	9	6.5	8.5
Jackson, Miss.	9.5	8.5	7.5	*8.5
Vicksburg, Miss.	9.5	8.5	7.5	*8
Birmingham, Ala.	10	9	*8.5	8
Mobile, Ala.	9	7	*9.5	8.5
Montgomery, Ala.	10	9	*9.5	*9
Atlanta, Ga.	10.5	9.5	7.5	*9
Augusta, Ga.	10.5	9.5	7.5	*8.5
Macon, Ga.	10.5	9.5	7.5	*9
Savannah, Ga.	9.5	....	7.5	*8
Jacksonville, Fla.	9.5	8.5	8.5	8
Miami, Fla.	9.5	8.5	8.5	8
Pensacola, Fla.	9	8	*9.5	8
Tampa, Fla.	9.5	8.5	8.5	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Standard (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.6	9.6	8.5	4.5	10.3
Decatur, Ill.	10.9	8.9	8	4.5	9.5
Joliet, Ill.	11.9	9.6	8.5	4.5	10.3

(Continued on next page)

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon:

Alabama 1 40c on gasoline, 1 2c on kerosine; Arkansas 1 20c; Florida 1 8c; Illinois 3 100c; Indiana 1 5c in lots of 25 bbls. or less, 2 25c in lots of more than 25 bbls.; Kansas 1 50c; Louisiana 1 32c; Minnesota 7 200c; Missouri 1 50c; Nebraska 3 100c; Nevada, gasoline 1 20c; North Carolina 1 4c; North Dakota 1 20c; Oklahoma 2 25c; South Carolina 1 8c; South Dakota 1 20c; Tennessee 2 5c; and Wisconsin 3 100c.

Kerosine inspection fees only: Iowa 3 50c; Michigan 1 5c per gal.

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include* 1.5c *federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes. These prices in effect Sept.* 2, 1941 *as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. Indiana (Cont'd)

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown T.W.	Stano-lind T.W.	Gaso-line Taxes	Kero-sine T.W.
Peoria, Ill	11.7	10.2	9.7	4.5	10.1
Quincy, Ill	8.9	7.9	7.9	4.5	10
Indianapolis, Ind	11.6	9.7	9.6	5.5	*9.8
Evansville, Ind	11.4	9.9	9.4	5.5	*9.6
South Bend, Ind	12	10.5	10	5.5	*10.2
Detroit, Mich	11.4	9.9	9.4	4.5	9.6
Grand Rapids, Mich	11.4	9.9	9.4	4.5	9.6
Saginaw, Mich	11.4	9.9	9.4	4.5	9.6
Green Bay, Wis	12.2	10.7	10.2	5.5	10.6
Milwaukee, Wis	12.1	10.6	10.1	5.5	10.5
La Crosse, Wis	11.9	10.4	9.9	5.5	10.3
Minneapolis-St. Paul	11.9	10.4	9.5	5.5	10.3
Duluth, Minn	12.2	10.7	10.2	5.5	10.6
Mankato, Minn	11.9	10.4	9.5	5.5	10.3
Des Moines, Ia	11.4	8.4	7.9	4.5	*9.8
Davenport, Ia	11.7	10.2	9.7	4.5	*10.1
Mason City, Ia	11.7	10.2	9.7	4.5	*10.1
St. Louis, Mo	8.9	7.4	7.4	*4.5	9.8
Kansas City, Mo	10.4	8.9	7.9	*4.5	9.4
St. Joseph, Mo	11.2	9.7	8.7	*4.5	9.6
Fargo, N. D	12.9	9.4	10.5	5.5	11.3
Huron, S. D	12.3	10.8	10.3	5.5	10.7
Wichita, Kans	10.3	8.8	7	4.5	8

Stanavo Aviation 73 Octane

Chicago, Ill	15.7	4.5
Milwaukee, Wis	15.9	5.5
Minneapolis, Minn	15.7	5.5
St. Louis, Mo	15.2	*4.5
Kansas City, Mo	14.8	*4.5
Fargo, N. D	16.7	5.5
Huron, S. D	16.1	5.5

	Oleum Spirits	V.M.&P. Naphtha	Stani-sol	*Taxes
	(Prices are base prices before discounts)			
Chicago	13.5	13.8	12.8	4.5
Detroit	16	15	16.5	4.5
K. C., Mo	13.3	14.3	13.8	1.5
St. Louis, Mo	13.7	14.7	13.2	1.5
Milwaukee	14.4	15.4	13.1	5.5
Minneap'ls	14.2	15.2	13.5	5.5

	Fuel Oils T.W. Standard Heater Oil
	Chicago:
1-99 gals	8.75
100-149 gals	7.75
150 gals. & over	7.25

	Stanolex Fuel Oil No. 1	Stanolex Furnace Oil
1-99 gals	8.5	8.5
100-149 gals	7.5	7.5
150-399 gals	7.25	7.25
400 gals. & over	6.75	6.75

	Stanolex Fuel Oil A	Stanolex Fuel Oil B
1-99 gals	8	8
100-399 gals	7	7
400-749 gals	6	6
750 gals. & over	5.25	5.25

Stanolex Bunker C Fuel Oil

1-399 gals	6.5
400-999 gals	5.5
1000 gals. & over	4.5

Other Points:	Stanolex No. 1	Stanolex Furnace Oil
Indianapolis		
1-99 gals	...	*8.7
100 gals. & over	...	*7.7
Detroit		
1-99 gals	...	7.8
100 gals. & over	...	6.8
Milwaukee		
1-99 gals	9.2	8.7
100 gals. & over	8.2	7.7
Minneapolis		
1-99 gals	8.5	8.5
100 gals. & over	...	7.5
100-199 gals	8	...
200 gals. & over	7.5	...
St. Louis		
1-99 gals	8	7.5
100 gals. & over	7	6.5
Kansas City		
1-49 gals	7.8	...
50 gals. & over	6.8	...
1-99 gals	...	7.8
100 gals. & over	...	6.8

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax: Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1.5c federal tax and state taxes.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W. Dealer	Gaso-line Taxes	Kero-sine T.W.
Omaha	11.4 8.9	6.5	9.8
McCook	12 9.4	6.5	9.5
Norfolk	11.9 10.4	6.5	10.3
North Platte	12.3 9.9	6.5	10.7
Scottsbluff	12.4 9.5	6.5	10

S. O. Louisiana

Esso Gasoline (*Regular Grade*)

	Consumer Tank Car	Dealer T.w.	Gaso-line Taxes	Kero-sine T.W.
New Orleans, La	6.75	9.25	8.5	*9
Baton Rouge, La	6.75	9.25	8.5	*9.5
Alexandria, La	6.75	9.25	8.5	*9.5
Lafayette, La	7	9.5	8.5	*9
Lake Charles, La	7	9.5	8.5	*9
Shreveport, La	6.5	9	8.5	*8
Knoxville, Tenn	9.5	12	8.5	12.5
Memphis, Tenn	7.75	10.25	8.5	10.5
Chattanooga, Tenn	9	11	8.5	11
Nashville, Tenn	9.25	11	8.5	10
Bristol, Tenn	9.75	10.25	8.5	12
Little Rock, Ark	7.5	10	8	10

*Louisiana kerosine prices are ex 1c state tax.
Discounts:
Esso Gasoline—To undivided dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)
Thriftane (*Third Grade*)

	Humble *Tank Wagon	Re-tail	Thriftane *Tank Wagon	Re-tail	Gaso-line Taxes
Dallas, Tex	8	12	6.5	9.5	5.5
Ft. Worth, Tex	8	12	6.5	9.5	5.5
Houston, Tex	8	12	6.5	9.5	5.5
San Antonio, Tex	8	12	6.5	9.5	5.5

	Kerosine *Tank Wagon	Retail
Dallas, Tex	7	11
Ft. Worth, Tex	7	11
Houston, Tex	8	11
San Antonio, Tex	7	10

	Tank Car
74 Oct. Aviation Gasoline, Clear	
FOB Baytown, Tex	8.5

*To all classes of dealers & consumers.

The Texas Co.

	Gasoline—Dealer Fire-Chief (*Regular*)	T.W. Indian (*3rd Grade*)	Gaso-line Taxes
Dallas, Tex	8	6.5	5.5
Ft. Worth, Tex	8	6.5	5.5
Wichita Falls, Tex	8	6.5	5.5
Amarillo, Tex	8	6.5	5.5
Tyler, Tex	8	6.5	5.5
El Paso, Tex	10.5	9.5	5.5
San Angelo, Tex	8	6.5	5.5
Waco, Tex	8	6	5.5
Austin, Tex	8	6.5	5.5
Houston, Tex	8	6.5	5.5
San Antonio, Tex	8	6.5	5.5
Port Arthur, Tex	8	6.5	5.5

Continental Oil Co.

	Conoco Bronz-z-z (*Regular*) †Tank	De-mand (*3rd Grade*) Wagon	Gaso-line Taxes	Kero-sine T.W.
Denver, Col	10	9	5.5	11
Grand Junction, Col	12.5	11.5	5.5	12.5
Pueblo, Col	9.5	8.5	5.5	9.5
Casper, Wyo	11.5	10.5	5.5	12
Cheyenne, Wyo	10.5	9.5	5.5	11.5
Billings, Mont	11.5	10.5	6.5	12.5
Butte, Mont	10.5	9.5	6.5	13.5
Great Falls, Mont	10.5	9.5	6.5	12.5
Helena, Mont	10.5	9.5	6.5	13
Salt Lake City, Utah	13.5	12.5	5.5	14.5
Boise, Ida	13.6	12.6	6.5	16.5
Twin Falls, Ida	14.6	13.6	6.5	17
Albuquerque, N. M	10.5	9.5	*7	10
Roswell, N. M	8.5	7.5	*7	8.5
Santa Fe, N. M	10.5	9.5	*7.5	10
Ft. Smith, Ark	8.5	5.75	*7	6.5
Little Rock, Ark	9.25	6.15	8	8
Texarkana, Ark	8.5	6.5	*5.5	6
Muskogee, Okla	8.5	7.5	7	8
Oklahoma City, Okla	8	7.5	7	8
Tulsa, Okla	8	7.5	7	8

*Taxes: In gasoline tax column are included these city taxes—Albuquerque, & Roswell, 0.5c; Santa Fe, 1c. Texas 4c state tax applies within city limits of Texarkana, Ark.; Okla. 5.5c state tax applies within city limits of Ft. Smith, Ark.
†To consumers & dealers.
Discounts: To dealers only—Cheyenne 1.5c on Bronz-z-z & Demand.

S. O. California

Standard Gasoline (*Regular Grade*)
Flight Gasoline (*Third Grade*)

	Standard Tank Truck	Retail	Flight Tank Truck	Retail	Gaso-line Taxes
San Francisco, Cal	13	14	11	12	4.5
Los Angeles, Cal	12.5	13.5	10.5	11.5	4.5
Fresno, Cal	14	15	12	13	4.5
Phoenix, Ariz	15	16	12	13	6.5
Reno, Nev	15	16	15	14	5.5
Portland, Ore	13.5	14.5	11.5	12.5	6.5
Seattle, Wash	13.5	14.5	11.5	12.5	6.5
Spokane, Wash	15	16	13	14	6.5
Tacoma, Wash	13.5	14.5	11.5	12.5	6.5

	Stanavo Tank Truck	Aviation Gasoline Taxes	Kerosine Tank Truck
San Francisco, Cal	15.5	4.5	11.5
Los Angeles, Cal	15	4.5	10
Fresno, Cal	16.5	4.5	12.5
Phoenix, Ariz	17.5	6.5	12.5
Reno, Nev	17.5	5.5	13.5
Portland, Ore	16	6.5	13.5
Seattle, Wash	16	6.5	13.5
Spokane, Wash	19	6.5	16.5
Tacoma, Wash	16	6.5	13.5

Discounts:
To Resale & Commercial Consumers—3c off posted tank truck tax included price on Standard & Stanavo Aviation, 2c off on Flight. Deliveries less than 40 gals. to commercial consumer trade, 1c a gal. above posted tank truck tax included price, except single deliveries to Marine trade only which are billed at posted tank truck tax included price less 3c for Standard & Stanavo Aviation, and less 2c for Flight.
Kerosine—Tank car and truck & trailer deliveries, 3c off posted tank truck price; plant stem deliveries to jobbers, 2.5c off posted tank truck price.

Canada

PRICES OF IMPERIAL OIL, LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons
3-Star Imperial Gasoline (*Regular Grade*)

	†Gasoline T.W.	*Gasoline Taxes	†Kero-sine T.W.
Hamilton, Ont	16.5	11	18
Toronto, Ont	16.5	11	18
Brandon, Man	21	10	23
Winnipeg, Man	20.5	10	22.5
Regina, Sask	18	10	20
Saskatoon, Sask	20.8	10	22.8
Edmonton, Alta	18.9	10	20.9
Calgary, Alta	16	10	18
Vancouver, B. C	15	10	24
Montreal, Que	16	11	17.5
St. John, N. B	15.5	13	19
Halifax, N. S	15.5	13	19

*Includes 3c Federal, and Provincial taxes.
†To divided & undivided dealers.

Tank Wagon Price Changes

(These changes have been made in price tables)

Atlantic Refining—Kerosine:
Philadelphia up 0.15c Aug. 28.

S. O. Ohio—Sohio X-70 Gasoline:
Following advances Aug. 26: Akron reseller & s. s. 0.5c; Cincinnati reseller 0.8c, s. s. 1c; Dayton reseller 0.7c, s. s. 1c; Toledo reseller 0.75c, s. s. 1c.

S. O. Kentucky—Kerosine:
Correction: Paducah has been shown incorrectly as 6.5c since NPN of March 19, '41; correct price is 8.5c.

S. O. Indiana—Red Crown Gasoline:
Quincy t. w. cut 2c Aug. 22.

S. O. Indiana—Stanolind Gasoline:
Mason City dealer up 0.4c Aug. 28; Fargo dealer up 0.5c Aug. 27.

Humble Oil & Refining—Humble Gasoline:
Dallas & Ft. Worth t. w. & retail up 0.5c July 9.

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon:
Alabama 1.40c on gasoline, 1.2c on kerosine; Arkansas 1.20c; Florida 1.8c; Illinois 3.100c; Indiana 1.5c in lots of 25 bbls. or less, 2.25c in lots of more than 25 bbls.; Kansas 1.50c; Louisiana 1.32c; Minnesota 7.200c; Missouri 1.50c; Nebraska 3.100c; Nevada, gasoline 1.20c; North Carolina 1.4c; North Dakota 1.20c; Oklahoma 2.25c; South Carolina 1.8c; South Dakota 1.20c; Tennessee 2.5c; and Wisconsin 3.100c.
Kerosine inspection fees only: Iowa 3.50c; Michigan 1.5c per gal.

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates shown.

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (Aug. 23, '41)
Bradford-Allegany $2.75
Southwest Penna. $2.40
Eureka (West Va.) $2.34
Corning, O. (May 27, '41) $1.31

Posted by The Pennzoil Co. (Aug. 23, '41)
National Transit $2.68*

Posted by Valvoline Pipe Lines (Aug. 23, '41)
Bradford (Elk & McKean Counties, Pa.) $2.75
Warren, Forest, Venango, Clarion & Butler Counties, Pa. $2.68
Alleghany, Beaver, Washington & Greene Counties, Pa. $2.40
West Virginia $2.34
Southeastern Ohio $2.30

*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $2.63 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (May 27, '41)
Midland, Midland County $1.44
Sherman $1.39

Posted by Simrall Corp. (May 27, '41)
Greendale, Porter, Vernon, Crystal & Wise $1.44
Buckeye, Bentley, Edenville, Beaverton & Monitor (sweet crude type) $1.42
Freeman, Redding, Lincoln & Winterfield $1.39
West Branch-Arenac $1.24
Hamilton-Grout $1.29

Posted by Sohio Corp. (Mich. Div.)
Traverse crude in Allegan, Kent, Ottawa & Van Buren Cos. (June 2, '41) $1.45
Trenton crude, Monroe Co. (June 2, '41) $1.39

Posted by Bay Pipe Line Corp. (May 27, '41)
Saginaw & Wise $1.44
Buckeye, Bentley & Kawkawlin $1.42
Clare $1.11
Adams (June 1, '41) $1.27

ILLINOIS-INDIANA-KENTUCKY-OHIO

Posted by Sohio Corp. (May 21, '41)
Illinois Basin, including Griffin pool $1.37
Carmi Storms, Ill. area $1.32
Birk City, Ky. area $1.32
Corydon, Ky. area, Henderson $1.32

Posted by Ohio Oil Co. (May 21, '41)
Illinois Basin $1.37
Eastern Ill. & Western Ind. 1.22

Posted by Carter Oil Co. (May 21, '41)
Louden, Fayette Co. Ill. $1.37

Posted by Mohawk Oil Lines, Inc. (May 21, '41)
Southern Illinois $1.37

Posted by Ashland Oil & Transp. Co.
Somerset oil in Ash. Lines, Ky.; (June 19, '41)
Big Sandy River $1.38
Kentucky River $1.43

Posted by Ownesboro-Ashland Co.
Owensboro, Ky. area (May 21, '41) $1.32

Posted by S. O. Ohio (May 28, '41)
Lima, O. $1.17
Cleveland, Lodi & Chatham (O.) areas $1.22

MID-CONTINENT

OKLAHOMA-KANSAS-NORTH TEXAS

(See below for companies posting and dates)

Gravity	Schedule No. 1	Schedule No. 2	Schedule No. 3	Schedule No. 4
Below 21	$0.85	$0.75	$0.70	$0.78
21-21.9	.87	.78	.73	.80
22-22.9	.89	.81	.76	.82
23-23.9	.91	.84	.79	.84
24-24.9	.93	.87	.82	.86
25-25.9	.95	.90	.85	.88
26-26.9	.97	.93	.88	.90
27-27.9	.99	.96	.91	.92
28-28.9	1.01	.99	.94	.94
29-29.9	1.03	1.02	.97	.96
30-30.9	1.05	1.05	1.00	.98
31-31.9	1.07	1.07	1.02	1.00
32-32.9	1.09	1.09	1.04	1.02
33-33.9	1.11	1.11	1.06	1.04
34-34.9	1.13	1.13	1.08	1.06
35-35.9	1.15	1.15	1.10	1.08
36-36.9	1.17	1.17	1.12	1.10
37-37.9	1.19	1.19	1.14	1.12
38-38.9	1.21	1.21	1.16	1.14
39-39.9	1.23	1.23	1.18	1.16
40 & above	1.25	1.25	1.20	1.18

Above schedules posted by:

No. 1: **S. O. Indiana** May 20, '41 in Okla. & Kans. **Sinclair-Prairie** May 20, '41 in Okla. & Kans. beginning with 25-25.9. **Continental** May 19, '41 in Okla. & Kans. beginning with Below 29 at $1.01. **Texaco** May 19, '41 in Okla. & Kans. beginning with 28-28.9 at $1.01.

No. 2: **Carter** May 20, '41 in Okla. **Shell** May 19, '41 in Okla. & Kans. (exclusive of Carter Co., Okla.) **Magnolia** May 21, '41 in Okla.

No. 3: **Shell** May 19, '41 in Carter Co., Okla.

No. 4: **Stanolind** May 20, '41 in N. Texas. **Magnolia** May 21, '41 in N. & N. Central Texas. **Sinclair-Prairie** May 21, '41 in N. Central Texas. **Continental** May 21, '41 in N. Texas. **Texaco** May 21, '41 in N. & N. Central Texas. **Magnolia, Sinclair-Prairie** & **Continental** schedules begin with Below 29 at $0.94. **Texaco** schedule begins with 28-28.9 at $0.94.

TEXAS & NEW MEXICO FIELDS

Posted by Humble Oil & Refining Co.

(May 21, '41, except Panhandle, Tex. July 9, '41)

Gravity	Refugio	Texas Gulf Coast	Mirando	Anahuac	Dickinson	East Central Texas	West Central Texas	Panhandle, Texas	W. Texas & New Mex.	Hawkins Texas
Below 20	$1.08	$1.06	$1.03	$0.98	$0.93	....	....	$0.73	$0.70	$0.80
20-20.9	1.10	1.08	1.05	1.00	.95	....	....	.75	.72	.82
21-21.9	1.12	1.10	1.07	1.02	.97	....	....	.77	.74	.84
22-22.9	1.14	1.12	1.09	1.04	.99	....	....	.79	.76	.86
23-23.9	1.16	1.14	1.11	1.06	1.01	....	....	.81	.78	.88
24-24.9	1.18	1.16	1.13	1.08	1.03	....	....	.83	.80	.90
25 & above	....	....	....	....	....	....	....	....	....	.92
25-25.9	1.20	1.18	1.15	1.10	1.05	$0.97	$0.88	.85	.82	....
26-26.9	1.22	1.20	1.17	1.12	1.07	.99	.90	.87	.84	....
27-27.9	1.24	1.22	1.19	1.14	1.09	1.01	.92	.89	.86	....
28-28.9	1.26	1.24	1.21	1.16	1.11	1.03	.94	.91	.88	....
29-29.9	1.28	1.26	1.23	1.18	1.13	1.05	.96	.93	.90	....
30-30.9	1.30	1.28	1.25	1.20	1.15	1.07	.98	.95	.92	....
31-31.9	1.32	1.30	1.27	1.22	1.17	1.09	1.00	.97	.94	....
32-32.9	1.34	1.32	1.29	1.24	1.19	1.11	1.02	.99	.96	....
33-33.9	1.36	1.34	1.31	1.26	1.21	1.13	1.04	1.01	.98	....
34-34.9	1.38	1.36	1.33	1.28	1.23	1.15	1.06	1.03	1.00	....
35-35.9	1.40	1.38	1.35	1.30	1.25	1.17	1.08	1.05	1.02	....
36-36.9	1.42	1.40	1.37	1.32	1.27	1.19	1.10	1.07	1.04	....
37-37.9	1.44	1.42	1.39	1.34	1.29	1.21	1.12	1.09	1.06	....
38-38.9	1.46	1.44	1.41	1.36	1.31	1.23	1.14	1.11	1.08	....
39-39.9	1.48	1.46	1.43	1.38	1.33	1.25	1.16	1.15	1.10	....
40 & above	1.50	1.48	1.45	1.40	1.35	1.27	1.18	1.15	1.12	....

Refugio: Includes crude purchased in East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, & Tom O'Connor fields.

Texas Gulf Coast: Includes crude purchased in Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawn, Mykawa New, Raccoon Bend, South Thompsons, Sugarland, Thompsons, & Webster fields.

Mirando: Includes crude purchased in Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North & South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, & Tesoro fields.

Anahuac: Includes crude purchased in Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (Old & New), Pierce Junction, Red Fish Reef, & Turtle Bay fields.

Dickinson: Includes crude purchased in Dickinson, Gillock, Hardin, League City, & Rowan fields.

East Central Texas: Includes crude purchased in Anderson, Cherokee, Limestone, & Navarro Counties, and Navarro Crossing field.

West Central Texas: Includes crude purchased in Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, & Throckmorton Counties.

Panhandle, Texas: Includes crude purchased in Carson, Gray, Hutchinson & Wheeler Counties.

West Texas & New Mexico: Includes crude purchased in Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, & Yoakum Counties, Texas; Lea County, N. M.

Hawkins: Includes crude purchased in Hawkins Field, Wood County, Texas.

Conroe $1.43
Tomball 1.40
Van 1.08
Talco 0.79
East Texas & Flag Lake $1.25
Flour Bluff, E. Flour Bluff 1.33
Salt Flat, N. Salt Flat 1.14
Darst Creek, Hilbig, Carroll 1.14
Clark, Zoboroski $1.14
Alice, Benavides (N. Sweden), Sun 1.35
Ben Bolt, Clark-Muil, Tom Graham 1.35
Yates (Pecos) 0.95
La Rosa 1.33

MAGNOLIA PETROLEUM CO.

(May 21, '41)

Panhandle, Tex.—(July 9, '41)—Same as Humble except Magnolia begins with Below 29 at $0.91.

West Texas—In Crane, Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum & Gaines Cos.—Same as Humble except Magnolia begins with Below 25 at $0.80.

N. Mexico—In Lea Co.—Same as Humble except Magnolia begins with Below 25 at $0.80 & ends with 36 & above at $1.04.

Cass & Panola Cos., Tex.—Below 25 at $0.88, plus 2c per degree of gravity to 40 & above at $1.20.
Mirando, Tex.—Same as Humble.

East Texas $1.25
Darst Creek 1.14
Luling 1.05
Talco ..... .79
Lytton Springs $1.17
Cleveland-Liberty Co. 1.26
Tomball 1.40

SINCLAIR-PRAIRIE OIL MARKETING CO.

Texas Panhandle—(May 23, '41)—Same as Humble except Sinclair-Prairie begins with Below 25 at $0.83.
West Texas & New Mexico—(May 30, '41)—Same as Humble except Sinclair-Prairie begins with Below 25 at $0.80.

Texas Gulf Coast—(May 21, '41)—Same as Humble.
Mexia District, Texas—(May 30, '41)—Same as Humble, East Central Texas, except Sinclair-Prairie also posts Below 25 at $0.95.

East Texas—(May 21, '41) $1.25
Long Lake, Texas—(May 21, '41) 1.23

STANOLIND OIL PURCHASING CO.

(May 21, '41)

Clinton, Tex.—Same as Humble Tex. Gulf Coast except Stanolind begins with Below 21 at $1.08.

Fairbanks, N. Houston & Rosslyn, Tex.—Same as Humble Dickinson schedule.

E. Texas $1.25
Satsuma & Tomball, Tex. $1.40

STANOLIND OIL & GAS CO.

(May 21, '41)

W. Beaumont & Spindletop (Jefferson Co., Tex.) **& High Island** (Galveston Co., Tex.)—Same as Humble Tex. Gulf Coast.

Hendrick & Henderson (Winkler Co., Tex.)—Same as Humble Panhandle except Stanolind begins with Below 26 at $0.82.

THE TEXAS CO.

(May 21, '41)

Panhandle, Tex.—Same as Humble except Texaco begins with 34-34.9 at $1.03.

W. Texas & Lea Co., N. M.—Same as Humble except Texaco posts $0.78 for 23.9 & below and ends with 36 & above at $1.04.

Texas Gulf Coast—Same as Humble except Texaco ends with 34 & above at $1.36.

Duval, Mirando, Tex.—Same as Humble Mirando except Texaco ends with 28-28.9 at $1.21.

Refugio, Tex.—Same as Humble except Texaco ends with 28-28.9 at $1.26.

East Texas $1.25
Darst Creek, Tex. 1.14
Cass Co., Tex. $1.20
Conroe, Tex. 1.43
Hockley & Cochran Cos., Tex. ..... .87

SHELL OIL CO., INC.

(May 20, '41)

West Texas & Lea Co., N. M.—Same as Humble except Shell ends with 36 & above at $1.04.

Fisher Co., Tex.—Same as Humble W. Central Texas except Shell begins with Below 25 at $0.86.

East Texas $1.25
Livingston field, Polk Co., Tex. 1.25
Pecos Co., Tex., except Yates Shallow pool. $0.95
Pecos Co., Yates Shallow pool ..... .82

CONTINENTAL OIL CO.

Carson & Hutchinson Cos., Tex.—(July 9, '41)—Same as Humble Panhandle except Continental begins with Below 29 at $0.91.

Mirando, Tex.—(July 1, '41)—Same as Humble.
Wade City & Clara Driscoll, Tex.—(July 1, '41)—Same as Humble Refugio.

Alfred & Magnolia City, Tex.—(May 21, '41), $1.35.
Eddy Co., N. M.—(May 30, '41)—Same as Humble N. M. schedule except Continental begins with Below 29 at $0.88.

PAN AMERICAN PRODUCTION CO.

(May 21, '41)

Hastings & S. Houston, Tex.—Same as Humble Tex. Gulf Coast except Pan Am. begins with Below 21 at $1.08.

Gillock, Tex.—Same as Humble Dickinson except Pan Am. begins with Below 21 at $0.95.

East Texas $1.25
Cayuga, Tex. ..... .90

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates shown.

CALIFORNIA

Posted by S.O Californ ia, May 23, 1941

(All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Olinda Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Colee Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Gravity
14-14.9	....	$0.68	....	....	$0.71	....	$0.70	....	$0.70	$0.70	$0.70	$0.72	....	....	....	....	....	$0.73	$0.73	$0.73	14-14.9
15-15.9	....	.71	....	....	.75	$0.76	.72	....	.72	.71	.72	.72	....	....	....	....	....	.73	.73	.73	15-15.9
16-16.9	....	.74	$0.79	....	.79	.79	.75	....	.74	.73	.75	.72	....	....	....	....	....	.73	.75	.73	16-16.9
17-17.9	....	.78	.82	....	.82	.82	.78	....	.77	.76	.78	.72	....	....	....	....	....	.75	.78	.73	17-17.9
18-18.9	$0.80	.82	.86	....	.86	.85	.81	....	.80	.79	.82	.74	....	....	....	....	....	.78	.81	.73	18-18.9
19-19.9	.84	.86	.90	....	.89	.88	.85	....	.83	.82	.85	.77	....	....	....	....	$0.73	.81	.84	.75	19-19.9
20-20.9	.88	.90	.94	....	.93	.92	.88	....	.86	.85	.89	.80	....	....	....	....	.76	.85	.87	.77	20-20.9
21-21.9	.92	.94	.98	....	.96	.95	.91	....	.89	.89	.92	.84	....	....	....	....	.79	.90	.90	.80	21-21.9
22-22.9	.96	.98	1.02	$0.88	.99	.98	.95	....	.93	.93	.96	.87	....	....	....	....	.83	.94	.93	.83	22-22.9
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	.98	....	.97	.98	1.00	.91	....	....	....	....	.87	.99	.96	.86	23-23.9
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	1.01	....	1.01	1.02	1.03	.94	$0.99	....	....	....	.90	1.03	.99	.89	24-24.9
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	1.04	....	1.05	1.06	1.07	.98	1.02	....	....	....	.94	1.07	1.01	.92	25-25.9
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	1.08	....	1.09	1.10	1.11	1.01	1.06	....	....	....	.97	1.11	1.04	.95	26-26.9
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	1.07	.98	27-27.9
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	1.04	1.19	1.10	1.00	28-28.9
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	1.07	1.24	1.13	1.02	29-29.9
30-30.9	1.23	1.24	....	....	1.23	1.22	....	1.21	....	Elwood	....	1.15	1.21	1.15	$1.01	$1.09	1.10	1.28	1.16	1.04	30-30.9
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32-32.9	....	....	....	....	....	....	....	1.29	....	F.o.b. Ship		1.23	1.28	1.23	1.07	1.14	1.17	....	....	1.09	32-32.9
33-33.9	....	....	....	....	....	....	....	1.32	....	$1.22	....	1.27	....	1.26	1.10	1.17	....	....	....	1.11	33-33.9
34-34.9	Kettleman Hills			....	....	....	....	1.36	....	1.25	....	1.31	....	1.30	1.13	1.20	....	....	....	1.13	34-34.9
35-35.9	....	$1.23	....	....	....	....	....	....	....	1.28	....	1.35	....	....	1.16	1.22	....	....	....	....	35-35.9
36-36.9	....	1.26	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	....	36-36.9
37-37.9	....	1.29	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....	37-37.9
38-38.9	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	38-38.9
39-39.9	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	39-39.9
40-40.9	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	40-40.9

Playa Del Rey: (FOB Standard Pipe Line) 20-20.9, $0.80; 21-21.9, $0.84; 22-22.9, $0.87.
Wheeler Ridge: 22-22.9, $0.76; 23-23.9, $0.80; 24-24.9, $0.83.
Newhall, Kern River, Kern Front, McKittrick & Round Mountain: 14-14.9 $0.73.

LOUISIANA-ARKANSAS

Posted by S. O. Louisiana, May 22, '41

Gravity	Atlanta, Ark. et al.	Caddo, La. et al.	Rodessa, La. et al.	Bunkie, La. et al.	Darrow, La. et al.	University, La. (Baton Rouge)
40 & above	$1.08	$1.18	$1.20	$1.30	$1.30	....
39-39.9	1.06	1.16	1.18	1.28	1.28	....
38-38.9	1.04	1.14	1.16	1.26	1.26	....
37-37.9	1.02	1.12	1.14	1.24	1.24	....
36-36.9	1.00	1.10	1.12	1.22	1.22	....
35-35.9	.98	1.08	1.10	1.20	1.20	....
35 & above	....	....	....	....	....	$1.36
34-34.9	.96	1.06	1.08	1.18	1.18	1.34
33-33.9	.94	1.04	1.06	1.16	1.16	1.32
32-32.9	.92	1.02	1.04	1.14	1.14	1.30
31-31.9	.90	1.00	1.02	1.12	1.12	1.28
30 & below	....	....	....	....	....	1.26
30-30.9	.88	.98	1.00	1.10	1.10	....
29-29.9	.86	.96	.98	1.08	1.08	....
28-28.9	.84	.94	.96	1.06	1.06	....
27-27.9	.82	.92	.94	1.04	1.04	....
26-26.9	.80	.90	.92	1.02	1.02	....
25-25.9	.78	.88	.90	1.00	1.00	....
Below 25	....	.86	.88	.98	....	....
24-24.9	.76	....	.88	....	.98	....
23-23.9	.74	....	.86	....	.96	....
22-22.9	.72	....	.84	....	.94	....
21-21.9	.70	....	.82	....	.92	....
Below 21	.68	....	.80	....	.90	....

Atlanta schedule includes Buckner, Lewisville, Magnolia, Village & Schuler (Jones Sand), Ark.

Caddo schedule includes De Soto, Sabine, Fouke, Homer, Miller Co., Nebo & Sugar Creek.

Rodessa schedule ncludes Cotton Valley & Shreveport (Cross Lake) ending with Below 25 at $0.88; Ause La Butte (Aug. 1, '41).

Bunkie schedule includes Eola, Olla, & South Olla.

Darrow schedule includes Bayou Mallet, Choctaw, Jeanerette, Lirette, N. & S. Crowley, Port Allen, Port Barre, Potash, Roanoke, & St. Martinville.

Big Creek, Dorcheat, McKamie Distillates (Sour) $1.15
Heavy Smackover Crude ..... .83
Cotton Valley Distillate 1.30
Cotton Valley (Holloway Sand Crude) 1.25
Lisbon Distillate 1.20

(Continued next column)

LOUISIANA-ARKANSAS (Cont'd)

Posted by Shell Oil Co., Inc. (May 20, '41)

Gravity	Iowa	Roanoke	Gibson
Below 20	$0.99	$0.94	$0.89
20-20.9	1.01	.96	.91
21-21.9	1.03	.98	.93
22-22.9	1.05	1.00	.95
23-23.9	1.07	1.02	.97
24-24.9	1.09	1.04	.99
25-25.9	1.11	1.06	1.01
26-26.9	1.13	1.08	1.03
27-27.9	1.15	1.10	1.05
28-28.9	1.17	1.12	1.07
29-29.9	1.19	1.14	1.09
30-30.9	1.21	1.16	1.11
31-31.9	1.23	1.18	1.13
32-32.9	1.25	1.20	1.15
33-33.9	1.27	1.22	1.17
34 & above	1.29	1.24	1.19

Iowa schedule includes Black Bayou & White Castle, La. fields.

Roanoke schedule includes Chalkley, La. field.

Gibson schedule includes S. Houma, Hester & W. Lake Verret, La. fields.

Happytown field, St. Martin Par., La. $1.15

Posted by Arkansas Fuel Oil Corp.

Urania, La. (May 22, '41) $1.15

Posted by Continental Oil Co. (May 21, '41)

Tepetate, La. $1.18
Ville Platte, La. 1.20
Lake Arthur, La. 1.18
Ritchie, La. (Sept. 1, '41) 1.08

Abbeville, La.

Below 36 $1.07	37-37.9 $1.11	39-39.9 $1.15
36-36.9 1.09	38-38.9 1.13	40 & above 1.17

CANADIAN FIELDS

Posted by Imperial Oil Limited Western Ontario (Nov. 6, 1939)

Petrolia ..... $2.10 Oil Springs $2.17

Turner Valley Crude Oil (July 16, '41)

(Prices FOB producer's tankage)

33-33.9 $1.35	44-44.9 $1.57	55-55.9 $1.79
34-34.9 1.37	45-45.9 1.59	56-56.9 1.81
35-35.9 1.39	46-46.9 1.61	57-57.9 1.83
36-36.9 1.41	47-47.9 1.63	58-58.9 1.85
37-37.9 1.43	48-48.9 1.65	59-59.9 1.87
38-38.9 1.45	49-49.9 1.67	60-60.9 1.89
39-39.9 1.47	50-50.9 1.69	61-61.9 1.91
40-40.9 1.49	51-51.9 1.71	62-62.9 1.93
41-41.9 1.51	52-52.9 1.73	63-63.9 1.95
42-42.9 1.53	53-53.9 1.75	64 & over 1.97
43-43.9 1.55	54-54.9 1.77	

Absorption Gasoline (July 16, '41)

90% Rec., 20 lb. Reid v.p. $2.28
90% Rec. 17 lb. Reid v.p. 2.44

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co. (May 20, '41)

Salt Creek (except Tensleep crude), Midway & Dutton Creek, Wyo.

Below 29 $0.96	32-32.9 $1.04	36-36.9 $1.12
29-29.9 .98	33-33.9 1.06	37-37.9 1.14
30-30.9 1.00	34-34.9 1.08	38-38.9 1.16
31-31.9 1.02	35-35.9 1.10	39-39.9 1.18
		40 & above 1.20

Wyoming:		Wyoming:	
Tensleep Crude	$0.6785	Grass Creek Light	$1.00
Frannie Light	.70	GrassCreek Heavy	.50
Frannie Heavy	.47	Elk Basin	1.00
Hamilton Dome	.45	Iles, Colo.	1.07

Posted by Ohio Oil Co. (May 20, '41)

Elk Basin, Wyo. $1.00
Grass Creek, Wyo., Light 1.00
Rock Creek, Wyo. 1.15
Lance Creek, Wyo., (July 1, '41) 1.12

Posted by Continental Oil Co. (May 21, '41) **Ft. Collins & Wellington, Col.**

Below 29 $0.96	32-32.9 $1.04	36-36.9 $1.12
29-29.9 .98	33-33.9 1.06	37-37.9 1.14
30-30.9 1.00	34-34.9 1.08	38-38.9 1.16
31-31.9 1.02	35-35.9 1.10	39-39.9 1.18
		40 & above 1.20

Canon City & Florence, Col. $1.05
Cat Creek, Mont. 1.15
Big Muddy, Wyo., (May 30, '41) $1.08
Lance Creek, Wyo., (July 1, '41) $1.12

CLASSIFIED

Address all Blind Box Number ads to National Petroleum News, 530 Penton Building, Cleveland, Ohio, unless otherwise specified.

Business Opportunities

Wholesale-Retail gas and oil business in heart of refining industry in Texas where there will be no rationing of gasoline. Have fourteen leased outlets and several outside accounts. Can be operated either as major or independent. This is good opportunity to get into business in territory where hundreds of millions in defense money being spent. Write for details. Box No. 956.

A REAL OPPORTUNITY
OIL PLANT FOR SALE OR RENT
60,000 GALLON CAPACITY

The Only Manufacturing Site of It's Kind In The Troy-Albany Area

4 tanks 10,000 gallons, 2 tanks 8,000 gallons, 8 tanks 3,000 gallons; one oil mixer one oil still and one steam boiler; meters, oil meters, pumps, large quantity of piping and also other equipment; 80,000 ft. of land. Factory 5,000 ft. of floor space, $50 a month. This plant can be used for oil or gasoline. 1,000 gallons of motor oil at 15c per gallon. Also office and warehouse for rent. Ship by rail or water. Will rent all or part of same. Alterations made to suit tenant. Inquire

CUSHING RUG CO.
Corner 118th St. and 2nd Ave.,
North Troy

Situation Open

Secretary, preferably male to assist Sales Manager. Must be expert stenographer. Should have experience following up salesmen, developing sales letters. Write full record—Send snapshot. State salary. Box No. 959.

Technically trained Assistant Superintendent for Mid Continent Refinery. Should have Dubbs and Poly experience. Write full record and experience, salary expected. Send snapshot. Excellent future. Our employees know of this advertisement. Box No. 960.

For Sale

One 3500 Gallon Transport For Sale, in good condition. Fall Creek Oil Co., Middletown, Indiana.

Complete Pennsylvania Refinery. Two thousand barrel tube still, wax plant, filter house, tankage of all sizes. Available immediately. Complete or in part. Address Box No. 944, National Petroleum News.

4500 gallon, two compartment tandem axle transport tanks. Can be inspected at Trenton, Michigan. Box No. 957, N.P.N.

Bulk Plant—35,000 gallon storage, wareroom 36 x 36, new 1½ ton Chevrolet truck, several good accounts, several gasoline pumps and tanks in use. Clearing about $4000 per year. One man handling. Business can be greatly increased. Major line. Quick sale $7400.00 cash. Owner ill health. Curiosity seekers don't apply. Address Box No. 955, N.P.N.

1940 Dodge tractor with 1235 gallon Heil semi trailer. Power take off for pump unloading. A bargain at $1000. Valley Oil Company, New Philadelphia, Ohio.

Wanted to Buy

Wanted any size propane gas storage tank. Rush size, equipment and price FOB car to Box No. 958, N.P.N.

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"Position Wanted"—5 cents a word Minimum charge $1.00 per insertion.

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Traffic Man—married—42 years old—present position 20 years—familiar oil rates, adjustments, claims and equipment. Box No. 961.

Purchasing Agent—Thirteen years experience with Major Independent Eastern Oil Company. Now employed. Desire Southwest connection. Age 35. University education. Box No. 962.

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· PERSONALS ·

An oil man who turned author last month is **H. F. Stoke,** Roanoke, Va., vice-president of Roanoke Oil Co. Three articles in a series on the East Coast gasoline supply situation written by Mr. Stoke were published in the Aug. 19, 20 and 22 issues, respectively, of the *Roanoke World-News.*

* * *

George C. Reid, secretary of Gulf Coast Refiners Assn., is back in Washington again. Rumor has it that his visit has something or other to do with doings at OPACS.

* * *

Leo M. Edwards, formerly foreman and test engineer for Quaker State Oil Refining Corp., Emlenton, Pa., is now associated with the Navy Department in New York as chief engineering aide in the machinery allowance section.

* * *

Miles R. Wiseman of Allied Oil Co. has returned to Cleveland after tramping the hills of Pennsylvania and visiting with his old cronies over the Labor Day week-end.

* * *

"Ike" Thomas, for 10 years manager of Tank Car Stations, Inc., Chicago, is now manager of White Fire Stations, Inc., Cleveland.

* * *

Col. Ernest O. Thompson, Texas Railroad Commissioner who is commanding officer of the 141st Infantry, Texas National Guard, became a "war" casualty recently at the Louisiana maneuvers, his office here has revealed.

His secretary said that Col. Thompson fell when leaping off a moving truck, and the back wheel passed entirely over one leg. However, he's back in action now, she said.

Col. Thompson, who is still active as one of the 3 railroad commissioners, drives to Teneha, just across the state line in Texas, to conduct official commission business while out of the state.

Designated as the automotive industry's "Man of the Year," **Earl B. Gilmore,** Los Angeles, president of Gilmore Oil Co., has received the Edenburn Trophy for "outstanding service" in sponsoring noted race drivers and for the annual "Gilmore Economy Run" which has aided in developing more efficiency in engine performance. The trophy, which perpetuates memory of Eddie Edenburn, noted racing expert and former chief steward of the Indianapolis Motor Speedway, is not awarded each year—only when the Edenburn Trophy Committee determines that an individual is entitled to this recognition because of his outstanding service to the automotive industry.

* * *

O. C. Nonweiler of Shreveport, formerly Carter Oil Co.'s southern division engineer, has joined Oklahoma Pipe Line Co. as chief engineer. He replaces **E. A. Warterfield, Jr.,** whose duties as vice-president of the new Plantation Pipe Line Co. are occupying his entire time.

Myron A. Wright of Seminole, Okla., replaces Mr. Nonweiler as southern division engineer, while **Carl G. Herrington** of Mattoon, Ill., has been transferred to Seminole as Central division engineer.

* * *

George C. Davies, who managed Socony-Vacuum's Rockefeller Center exhibit in New York for some time, has been transferred by the company to St. Louis.

New assistant sales manager of wholesale sales for Skelly Oil Co. is **J. S. Trowbridge** who replaces **J. F. Nagle,** resigned. Mr. Trowbridge will be located in Skelly's Kansas City, Mo., offices.

* * *

Linn M. Farish, chief geologist for Magnolia Petroleum Co. in the Dakota area, has resigned to join the Civilian Technical Corp., organized to assist Great Britain in carrying out the war.

* * *

R. W. (Bob) McDowell, Tulsa, Mid-Continent Petroleum Corp., has returned from a New York trip via Washington where he took in opening sessions of the Senate oil shortage investigation hearings.

* * *

Ralph T. Zook, Bradford, Pa., of Sloan & Zook Co., trod the well-worn path to OPACS in Washington last week to add his voice to pleas for raising the "ceiling" on Pennsylvania crude prices.

* * *

Indiana Standard's Kansas City Manager **J. W. Wilson** was presented an engraved plaque in honor of his having completed 3 decades of service with the company at a recent banquet given by 350 Kansas City employes and their families. Mr. Wilson has spent 15 years of those 3 decades as Kansas City manager.

* * *

Engineering Assistant **Lt. F. E. Black** of Gulf Research and Development Co., Pittsburgh, is now with the 71st Coast Artillery, Fort Story, Va., as a motor transport officer.

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY

Why Research Chemists and Engineers Should Resist Coercion to Join CIO

● A problem which has been periodically confronting both the executive and technical personnel of the petroleum industry since early in 1937, is once more appearing. The problem is whether or not professional men such as chemists and engineers of our industry should join a closed shop union.

Early in 1937 an attempt was made to force a majority of the refinery research and engineering personnel of a large organization to join the Federation of Architects, Engineers, Chemists and Technicians, an affiliate of the Committee for Industrial Organization. The effort was unsuccessful but a sit-down strike was called which lasted for about three hours. For two weeks the offices and laboratories of the company were picketed by a minority of workers during which considerable violence resulted. By unanimous vote the strikers then renounced the C.I.O. Federation and returned to work.

Since that time, according to the American Chemical Society, "the F.A.E.C.T. has attempted to organize chemists in a large number of industrial plants, including the plants of two large petroleum refiners, but as yet has not succeeded in enrolling any noticeable number of professional men." The Society, in 1939, "definitely went on record against the association of professional chemists and chemical engineers with a union."

In a speech printed in the Congressional Record for March 21, 1941, Congressman Martin Dies attacked the F.A.E.C.T. as operating "in some of our vital defense industries" and outlined some of its activities, together with the names of its organizers.

The July 10, 1941, news edition of the American Chemical Society printed the account of an attempt to force the 500 employes in the Shell Development Co. laboratories at Emeryville, Calif., to join a closed shop union of the F.A.E.C.T. The Society expressed its opposition to such an affiliation.

The feeling is general that, in the best interest of both employers and employes, there should be no unionization of professional men. The petroleum refining industry is depending upon the contribution of its research chemists and engineers to further develop this great national resource. These contributions will be hampered if the individual is restricted by the necessity of thinking in terms of labor union principles of salaries, seniorities, hours of work, and bargaining rights. The management of a company would be severely handicapped if it were required to fix a man's salary, or other reward, based only upon his education and age. The quality of research workers with those same fundamentals will vary widely. The individual with a keen imagination and ability to think will often return a large interest upon the investment to his employer, regardless of his experience in the company's business.

The employer will also be handicapped in his management of the research organization by regulations formulated by the C.I.O. federation of professional men. He will not be permitted to discharge an employe to replace him with a new and more qualified individual. Rank and salary will have to be judged only upon seniority. A new employe will receive a minimum starting salary based upon his education, regardless of his individual ability. Personality, scholastic standing, and ability to think would not be considered in the rating.

The good research worker wishes as little standardization as possible of his working hours and salary. He is happiest, and therefore most valuable to his company, when surrounded by an academic atmosphere. Research is not only his profession, but his hobby. He cannot shut off his mind at 5 p.m. The mental foundation he has achieved by years of study and thousands of dollars of investment makes his ambition different from those of the man who works essentially with his hands.

The mechanism whereby unwilling professional men are forced to join the F.A.E.C.T. has been similar in all cases. While the name of the federation indicates that it is composed of only architects, engineers, chemists, and technicians, as organized within a company, it consists largely of non-technical personnel.

The company union is started by a C.I.O. representative by addressing letters to the laboratory boys, operators, laborers, boiler firemen, office employes, and mechanics of the technical organization, inviting them to a meeting. A few chemists or engineers known to have communistic leanings may also be invited. After dramatic speeches and distribution of C.I.O. literature, signatures are taken of charter members of the organization. The number of names on this list is gradually increased by various means, in an attempt to obtain a majority of the employes as members. It may not be necessary initially to approach the technical personnel of the company, since they represent only 33 per cent of the payroll. Later, however, many methods of coercion are introduced to force these professional men into joining.

The efficiency of the research organization of any company would be seriously impaired if the professional men were forced into a closed shop union of the type proposed

by the Federation, where they would be out-voted by the non-technical personnel as directed by the C.I.O. Undoubtedly many valuable men would resign and today would be difficult to replace.

The management and professional men connected with petroleum research laboratories would therefore primarily help themselves by refusing to support the Federation of Architects, Engineers, Chemists and Technicians, even though they approve the principles of collective bargaining. As an alternative, to avoid the coercion and communistic principles directed by C.I.O. leaders, the members of research laboratories might co-operate with the management in the formulation of an employes' association. Elected representatives of this association would meet periodically with executives of the company for a round table discussion of problems concerned with employer-employe relations. Both would benefit. Let us hope, that in the best interests of the industry as a whole during this period of national crisis, research organizations will not succumb to non-professional domination.

Professional Men are Told How to Protect their Rights Against CIO Organizers

The steps that chemists and engineers and other professional men with oil companies can take to protect their own interests, in attempts to coerce them into joining a labor union, as is now being done by the CIO at the Emeryville, Cal., research laboratory of the Shell Development Co., are outlined in an editorial in the Sept. edition of Industrial and Engineering Chemistry. This is an official publication of the American Chemical Society.

"In such a situation," states the editorial, "professional men should, first of all, under no circumstances form a rival union or join the affiliates of any other union as a way out of a bad situation. If the labor organizers are successful in developing their plan to the point where an election must be held according to the Wagner Act, and under the National Labor Relations Board, then it should be insisted that the only question to be decided is, 'Do you want the XYZ to represent you for purposes of collective bargaining with your employer?'

"This requires a 'yes' or 'no' reply. The professional men and other employes can set up an informal organization and engage in a campaign of eduction among their fellows prior to the election. Care must be exercised, however, to exclude from such an informal group any employe who occupies an executive or supervisory position, with power to hire and fire, because the board might consider him to be a representative of the employer and hold that Sect. 8 (1) and (2) thus had been violated."

If a hearing is called by the labor board, the journal states, the professional men should be represented by counsel experienced in labor questions, to present their point of view and insist upon their elimination from the unit to be selected by the board for bargaining purposes, on the well-established ground that they are professional men engaged in confidential work. On the presentation of such evidence there is reason to believe the labor board would hesitate to include the professional men in an unsatisfactory unit.

If an election is held and the union prevails, it should be remembered that the law neither prohibits an employer from entering into a closed shop contract with a union, nor does it require him to enter into such a contract, or any at all, as the result of a bargaining process, it is said. "The employer, therefore, who is really interested in the professional status of his employes and in protecting those who do not want to be forced into the union, can decline to sign a closed shop contract requiring his professional employes to join the union as a condition precedent to further employment."

In the extreme case of the labor board designating for the purposes of collective bargaining a union unsatisfactory to the professional men, and including the professional men, and the employer agreeing to a closed shop contract, the most effective and courageous thing for men of this group to do, to protect their interests and self respect, would be to resign their jobs. This would be preferable to accepting such conditions as might be imposed by a union, the majority of whose members were of the non-professional type, the chemical society journal believes.

"If this procedure is followed by a reasonable number of professional men in a company, greater power can be brought to bear than is in the hands of either the employer or the union," its editorial states. "Other professionals able to do the type of work required are by no means likely to accept positions vacated under such circumstances by their fellows. The non-professional members of the unit will find themselves much worse off than before, because an organization depending upon the contributions of its professional chemists and chemical engineers for its progress and indeed for its life cannot survive such a calamity."

Dr. C. D. Lowry, Jr., Universal Oil Products Co., Chicago, addressed the National Tax Assn. convention in Houston, Aug. 22, on "Sulfur in Gasoline." He pointed out the fallacy of imposing by law arbitrary limits on the permissible sulfur content of motor gasoline.

Dr. Curtis L. Wilson, for 13 years professor of metallurgy and head of the Metallurgy Dept. of the Montana School of Mines, has been appointed Dean of the Missouri School of Mines and Metallurgy at Rolla, Mo., succeeding Dr. William R. Chedsey, resigned. He is an authority on the metallurgy of copper.

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Alloy Steel Characteristics For Oil Refinery Service

By W. G. Hildorf*

The development of alloy steels for use for refiners for high temperature, high pressure service, in place of the carbon steels widely used in the early 20s, is reviewed. The qualifications of alloy steel which are necessary for this service are described.

The more common alloying elements are classified on the basis of their effect upon corrosion resistance or improved mechanical strength of the steels. Another classification of steels is based on low or intermediate chromium content, again as affecting corrosion resistance and strength.

A distinct need still exists, this authority states, for steels capable of withstanding more severe conditions of temperature and stress, especially for continuous service at 1500°F. and higher, and also for lower temperatures when the desired stresses are large and the permissible amount of deformation is very small.

The next few years should see considerable developments in this particular field, it is stated, as certain technological processes, now in the laboratory stage, could be applied commercially if such alloys were available. (This development may be delayed further than was anticipated when this paper was prepared, it seems likely, because of the shortage of some of the metals for industrial uses arising through their prior allocation to defense needs. In this same period the increasing adoption of catalytic processes by refiners may create new demands for alloys different than those mentioned here—Editor).

This paper, some portions of which are omitted in this publication, was delivered before the Western Metal Congress of the American Society of Metals, in Los Angeles, in May, under the title, "Steels for Oil Refinery Service."

CONSIDERABLE progress has been made in the past few years in the development of steels capable of withstanding the requirements imposed by modern petroleum technology. Even as recently as the early 1920's, carbon steel was the material most widely used. Since that time, developments have been rapid and today a large number of alloy steels are available from which a choice can be made to meet a wide variety of operating conditions.

Before discussing the developments which have occurred in steels for this type of service, it might be well to briefly review the characteristics which these steels must possess. Certain of these characteristics are summarized in *Fig.* 1 and they will be seen to include both room temperature and high temperature properties.

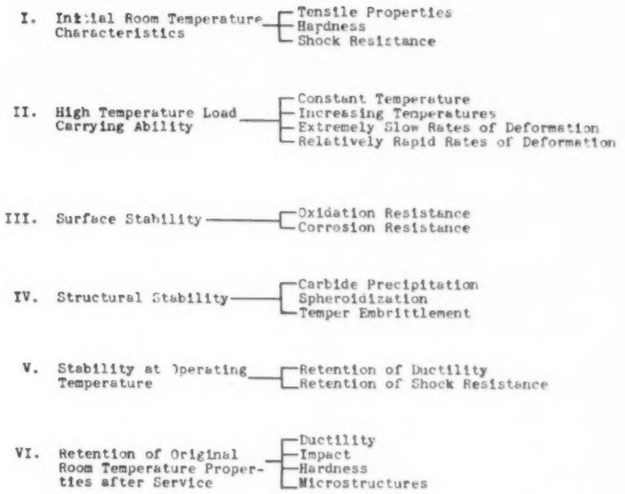


Fig. 1—Characteristics of steels for satisfactory high temperature service

Suitable room temperature properties in the as received condition are necessary for the strength, ductility, hardness and impact characteristics must be such as to permit installation in the desired equipment. These properties can be readily determined and, in fact, they usually serve as the basis for inspection.

As indicated, the interpretation placed on load carrying ability varies depending upon the particular type of application under consideration. In turbine parts, bolting and valves the operating temperature is generally fairly constant, permissible tolerances are small and consequently the creep strength for extremely slow rates of deformation is the basis of design.

In certain other equipment, such as oil cracking still tubes, the temperature may increase continuously during the operating cycle and bulging, when it does occur, probably takes place over a relatively short time period at the more elevated temperatures. Consequently, for this type of service, load carrying ability implies very rapid rates of deformation. Unfortunately with many steels, and especially those of the intermediate alloy type, the high temperature load carrying ability may vary considerably with the rate of deformation used in its determination. In other words, the steel which is outstanding in creep strength may be inferior under more rapid rates of deformation, such as one used in the rupture tests or the short-time tensile tests.

Surface stability is just as important as load carrying ability for, while the strength characteristics indicate the stress the steel is capable of withstanding, the surface stability determines the length of time it will be able to carry this stress. Insofar as high temperature applications are concerned lack of surface stability is indicated by

*Timken Roller Bearing Co.

oxidation or corrosion of either the general or intergranular type. Of these two, intergranular attack is the more serious.

In addition to strength and surface stability, high temperature steels must also possess structural stability, and be capable of retaining good ductility and shock resistance both at the operating temperature and at room temperature after service at elevated temperatures.

Fig. 2 classifies high temperature applications, both on the basis of physical requirements and industry and

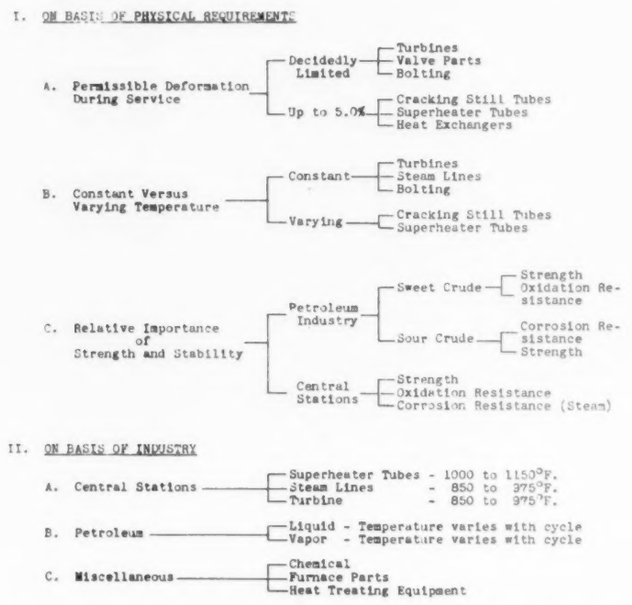


Fig. 2—Classification of high temperature application of steels

is included to show that the emphasis placed on the requirements previously discussed varies considerably in different industries and also in different applications within the same industry. Since the requirements for satisfactory high temperature service vary so greatly it follows that the methods for evaluation must also be adjusted so as to give the desired information and the more common means used for this purpose are summarized in *Fig.* 3.

Classification of Alloying Elements

Theoretically, at least, every element in the periodic table is available for use in the development of new steels

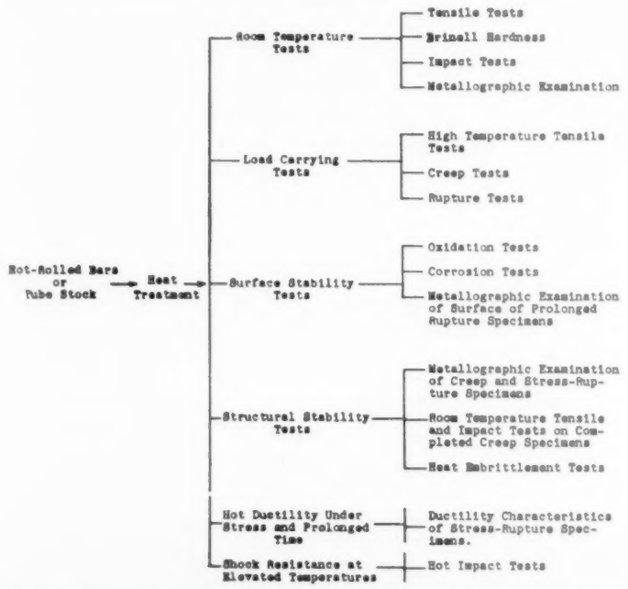


Fig. 3—Diagrammatic sketch of tests employed in determining the suitability of steels for high temperature service

and many concerned with the selection of steels for high temperature service probably feel that certain of the more recent alloys contain most of these. Actually, however, few have as yet been employed and when these are properly classified the subject of alloy steels becomes rather simple.

Fig. 4 shows two convenient methods of classifying the more common alloying elements. The first method

I. SOLID SOLUTION VERSUS CARBIDE FORMING ELEMENTS

A. Solid Solution	B. Carbide Formers
Nickel	Chromium
Chromium	Manganese
Silicon	Molybdenum
Manganese	Tungsten
Aluminum	Columbium
Copper	Titanium
Cobalt	Vanadium

II. FERRITE VERSUS AUSTENITE FORMERS

A. Ferrite	B. Austenite
Chromium	Carbon
Silicon	Nitrogen
Aluminum	Nickel
Molybdenum	Manganese
Tungsten	Cobalt
Vanadium	Copper
Columbium	
Titanium	

Fig. 4—Classification of the more common alloying elements

of classification is based on whether the elements go into solution or prefer to combine with the carbon. Certain of the elements fall in both classes for after all of the available carbon is consumed, the remainder will go into solution. While this is probably true of all of the carbide formers, the majority of these are added in such limited quantities that little is present in solution.

The second method of classification is based on whether the alloy element promotes the formation of ferrite or of austenite. This method is not as generally used and justifies further discussion. First, however, it should be recognized that the elements align themselves differently under the two methods of classification. That is, all of the solid solution elements are not austenite formers, and all of the carbide formers are not ferrite formers.

When the addition of a ferrite forming element exceeds a certain amount, which differs with different elements, the so-called gamma loop is closed. If the alloying addition exceeds this critical amount, the steel remains wholly or partially ferritic, regardless of the temperature to which it is heated; while if the amount added is insufficient to close the loop, the steel will undergo the normal transformation on heating. From *Fig.* 5 it is seen that the effectiveness of the ferrite formers in their ability to

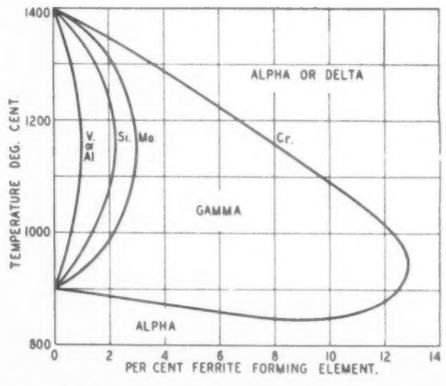
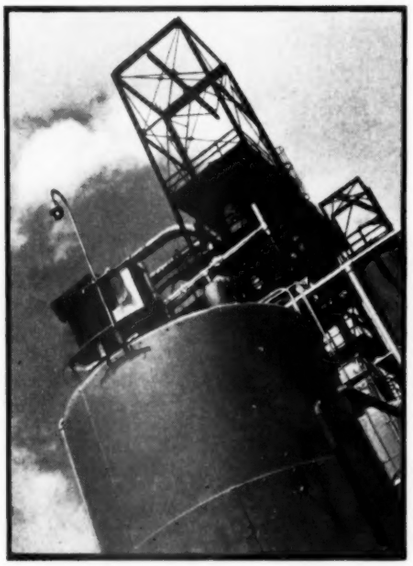


Fig. 5—Influence of designated alloying additions on the gamma loop

MEANS *LOST* ON-STREAM TIME

The national emergency has caused the oil industry to provide every possible precaution against saboteurs. Yet, in many refineries where every safeguard has been taken against "fifth columnists" . . . SALT, always a prime source of sabotage, is freely admitted in charging stock via pipe line and tank car.

It is seldom practical to refuse all salty crudes. With transportation facilities becoming more congested, the choice of charging stocks is bound to diminish. Therefore, as it becomes less practical to ban salty crudes, it becomes more and more essential that the dangers from salt be controlled.



Petreco Electromatic Desalting provides positive protection against lost on-stream time due to salty crudes. Refiners now using this process cite reduced corrosion and metal losses, less scaling, elimination of plugging, and up to 75% reduction in the use of ammonia. On-stream time has been increased from 50% to 1000%. Asphalt solubility and kerosene color stability are among the product improvements attributed to Petreco.

Complete data, and salt analyses of your crude charging stock, are available on request. A call by a Petreco representative will bring you many pertinent facts and figures, and involves no obligation.

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close the gamma loop varies, with chromium being the least and aluminum and vanadium the most powerful in this respect of the elements considered. In the absence of carbon, only about 1.0% of either of these latter two elements is required to accomplish this closing, with silicon about 2.2%, with molybdenum about 3.0%, and with chromium 12.8%.

(A portion of the original text at this point and 3 figures have been omitted, which deal mainly with the metallurgy of the various alloys and some of their properties, from the standpoint of the producer and user.)

Influence of Alloy Additions

In general it may be stated that the solid solution alloys are most effective in improving the surface stability against either oxidation or corrosion, while the carbide forming elements are the most effective in increasing the strength. All of the elements of either group are not equally effective, however, and further knowledge must be had with respect to certain of their individual characteristics.

Solid Solution Elements: First considering the question of surface stability and confining the discussion to oxidation, those solid solution alloying elements are effective which have a greater affinity for oxygen than does iron and which result in the oxide layer produced being dense and impermeable and having a strong adherence to the surface of the steel. The maintenance of this protective layer depends on a sufficient supply of the alloying elements diffusing to the surface so that the oxygen, penetrating through the protective layer will be entirely consumed. The more common elements which fulfill these conditions are chromium, silicon and aluminum. . . . .

The same general statements apply with respect to the corrosion resistance, except that the alloying elements must have a greater affinity for the particular corroding agent than does iron. In the case of resistance to corrosion in hot petroleum products it is now generally agreed that this resistance is proportional to the chromium content, as shown in *Fig.* 9, which is taken from the work of E. S. Dixon. More recent information shows the corrosion

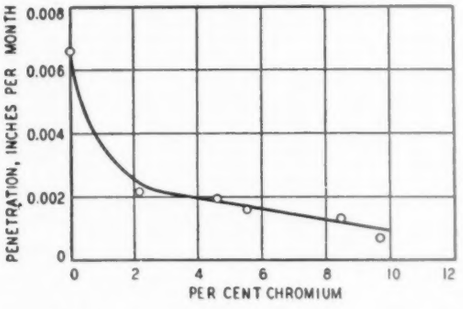

Fig. 9—Resistance to corrosion is proportional to chromium content

resistance to be more pronouncedly increased as the chromium is extended beyond 6.0% than would be indicated by this relationship. Results from one refinery show a 7.0% chromium type steel to be over 5 times as resistant as a 5% chromium steel and a 9.0% chromium steel to be nearly 7 times as resistant. . . . . .

Carbide-Forming Elements: The carbide forming elements which have been found to be the most effective in improving the high temperature strength characteristics are chromium, molybdenum, tungsten and vanadium. . . . .

The high temperature strength does not necessarily increase continuously with increasing additions of any of the carbide forming elements and in most cases the maximum creep resistance has been found to exist in the presence of certain critical amounts of these elements. This condition is illustrated in *Fig.* 12, which shows the influence of varying chromium and molybdenum content on a series of steels containing approximately 1.0% silicon. At

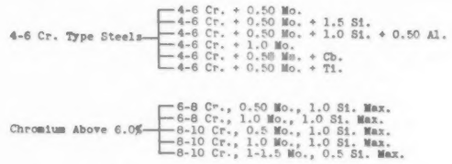
4-6 Cr. Type Steels
4-6 Cr. + 0.50 Mo.
4-6 Cr. + 0.50 Mo. + 1.5 Si.
4-6 Cr. + 0.50 Mo. + 1.0 Si. + 0.50 Al.
4-6 Cr. + 1.0 Mo.
4-6 Cr. + 0.50 Mo. + Cb.
4-6 Cr. + 0.50 Mo. + Ti.
Chromium Above 6.0%
6-8 Cr., 0.50 Mo., 1.0 Si. Max.
6-8 Cr., 1.0 Mo., 1.0 Si. Max.
8-10 Cr., 0.5 Mo., 1.0 Si. Max.
8-10 Cr., 1.0 Mo., 1.0 Si. Max.
8-10 Cr., 1-1.5 Mo., 0.5 Si. Max.

Fig. 12—Influence of varying chromium and molybdenum content on the creep strength. (0.01%/1000HR)

1100° F. the maximum creep strength is obtained with a chromium content of about 5.0% and at 1200° F. with a chromium content of about 3.0%. . . . .

The evaluation of the load carrying ability of the intermediate alloy steels is complicated by the fact that their strength characteristics vary to a considerable extent depending on the rate of deformation used in their determination. This is illustrated by *Fig.* 13, which shows the 100,000 rupture strength characteristics of the same steels considered in *Fig.* 12. Under this rate of deformation, and in the presence of 0.50% molybdenum, the 7.0% chromium

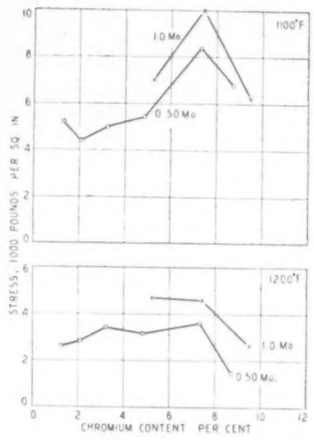

Fig. 13 — Influence of varying chromium and molybdenum content on the rupture strength (100,000 HR)

steel is superior at both temperatures. Increased molybdenum content likewise exerts a greater degree of improvement than was the case with the creep strength.

The question therefore arises as to which characteristics should be used in the evaluation of the strength characteristics of these steels and in order to answer this the proposed application must be analyzed. If the application is one in which the temperature rises continuously during the operating cycle, as in cracking still tubes, an appreciable deformation may occur over a relatively short-time period, then the rupture strength is believed to be the most suitable basis of evaluation. If, on the other hand, the temperature is constant and the permissible deformation small, then the creep characteristics can best serve for this purpose.

Low Alloy Steels

In the discussion of steels commercially available for oil refinery service, they will be grouped for convenience in the following types: low alloyed and intermediate alloyed grades. Since chromium is present in the majority of these steels, this element will be used as the basis for classification with the division between the two groups being placed at 3 to 4% chromium.

The low alloyed steels in present day use are summarized in *Fig.* 14. First considering the carbon-molybdenum type steels it was early recognized that their oxidation or corrosion resistance was no better than that of

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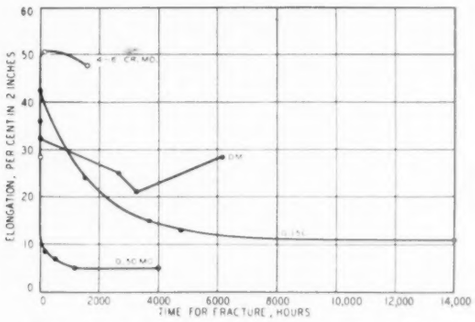


Fig. 14—Developments in low alloyed steels

plain carbon steel and consequently silicon, in amounts up to 1.5% was added in order to improve the surface stability. Higher amounts of molybdenum were also used in an attempt to further improve the strength and while improvement resulted, the most popular steel of this type is still that containing 0.50% of this element. While the increased molybdenum content may impart greater strength, especially at temperatures in excess of 1000° F., it does not improve the surface stability and consequently if steels of this type are to be used their surface must be protected by some means.

The standard 0.50 Mo steel is finding very extensive use in steam power plants at temperatures up to 950° F. and for cracking still tubes. The only recent development has been in grain size and structural characteristics. Over this portion of the temperature range, a structural grain size of 3 to 6, accompanied by a Widmanstatten type structure, has been found to impart the maximum creep strength.

A characteristic of the 0.50 Mo steel which is causing concern at the present time is its low hot ductility, especially at 950 to 1000° F., when fracture occurs over a very prolonged time period, as shown in *Fig.* 15. This implies that fracture, when it does result at these temperatures, may be of the brittle type but, as indicated, this characteristic can be eliminated by the addition of 1.0% or more chromium.

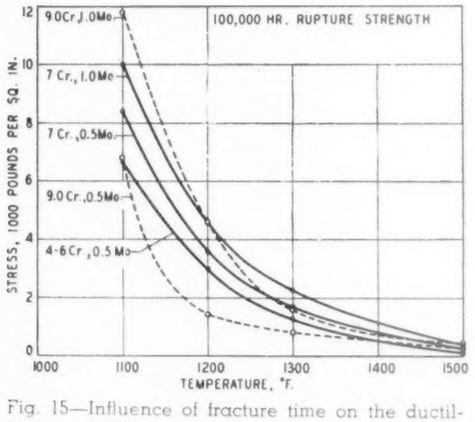


Fig. 15—Influence of fracture time on the ductility at 1000° F.

Referring back to *Fig.* 14, the developments which have occurred in the low-alloyed chromium bearing steels have consisted of variations in the chromium content, over the range from 1.0 to 3.0% inclusive, of increases in the silicon content up to 1.5%, of an increase in the molybdenum content, and of the addition of aluminum. The range in the chromium content results from the fact that the corrosion resistance in hot petroleum products is proportional to it and these steels are available for varying service demands in this respect. The increased silicon content is for the purpose of further improving the oxidation and corrosion resistance, as is the addition of aluminum, while the increased molybdenum content is for increasing the strength.

All of these steels have a surface stability superior to that of 0.50 Mo and many of them also possess higher strengths, as shown in *Fig.* 16. As in the case of 0.50 Mo steel their strength is further improved by a coarsened structural grain size provided the carbide formation is of the Widmanstatten type. This condition is, however, rather difficult to obtain in steels containing much in excess of 1.5% chromium.

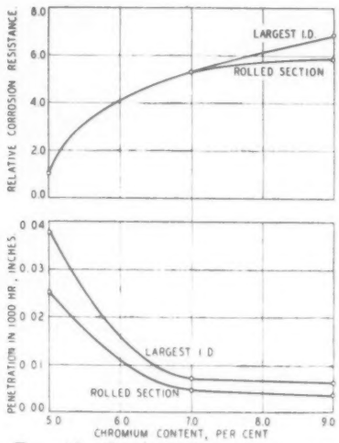


Fig. 16—Comparative creep resistance of plain carbon, 0.50 Mo and 1.25 Cr-0.50 Mo steels

Intermediate Alloy Steels

The more common types of intermediate alloy steels now available for high temperature service are summarized in *Fig.* 17. For convenience these are classified into two groups, the first of which contains 4 to 6% chromium and the second, chromium in excess of 6.0%. There is a historical basis for this method of classification as the 4-6% chromium type steels were among the first developed for high temperature service and the higher alloyed steels may, in many respects, be considered as modifications of this original grade.

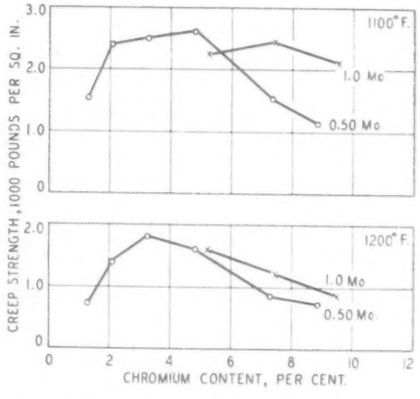


Fig. 17—Types of intermediate alloy steels for high temperature service

4-6 Cr.Mo. Type Steels: The 4-6 Cr. type steels were originally introduced because of their superior corrosion resistance to plain carbon steel in hot petroleum products for, at the time of their introduction, it was commonly believed that all of the pearlitic type steels possessed the same high temperature load carrying ability. The first steel of the type contained no alloying addition other than chromium but it was soon found that this straight chromium steel was susceptible to temper embrittlement. That is, after prolonged service at temperatures within the

range of about 800 to 1000° F. it lost its room temperature impact resistance and consequently failure was apt to result if it was subjected to shock. It was found that this susceptibility to temper embrittlement could be eliminated by the addition of tungsten or molybdenum and a very large percentage of this analysis made today in either its standard, or modified, form contains 0.50% molybdenum. It was later found that molybdenum also increased the strength and consequently this element plays a double role in steels of this type.

More recently, that is, within the last five years or so, certain other changes have been made in this analysis so as to improve certain of its high temperature characteristics. While the corrosion resistance of this steel is ample for the refining of many different types of crudes, its oxidation resistance decreases rapidly at temperatures in excess of 1200° F. Referring to our previous discussion it is evident that this corrosion resistance can be improved by the addition of either, or both, silicon and aluminum, and consequently modifications were developed containing up to 1.5% silicon, and also 1.0% silicon plus 0.50% aluminum.

(Six paragraphs and two figures have been omitted here, which cover the effect of silicon, aluminum, carbon, columbium and titanium upon corrosion and hardening resistance.)

The 100,000 hour rupture strength of certain of the 4-6 Cr.Mo. modifications are shown in *Fig.* 20. All of these steels were considered in the annealed from 1550° F. con-

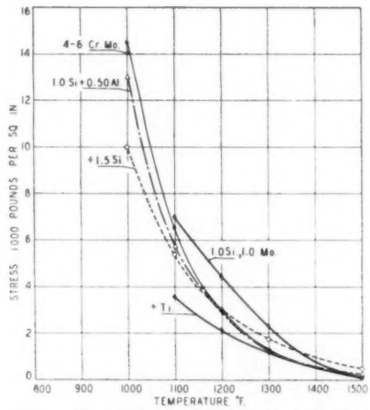


Fig. 20—Rupture strength (100,000 HR) of 4-6 CrMo modifications

dition and it will be observed that at temperatures of 1100 to 1300° F., inclusive, the titanium modification possesses the lowest rupture strength of the steels considered. At the lower temperatures, that is, 1000 and 1100° F., the standard 4-6 Cr.Mo. steel has the highest strength, while at the more elevated temperatures the silicon modification is the outstanding one. This is due to its greater surface stability.

It should be recognized that these values were determined under slightly oxidizing conditions and that, if the atmosphere had been more highly oxidizing or if it had been corrosive, certain of the modifications of 4-6 Cr.Mo. might have showed to even greater advantage.

Chromium in Excess of 6.0%: As previously indicated these steels may be considered as modifications of the 4-6 Cr.Mo. type, their only difference being that they contain an increased chromium content. The same additional alloying elements can be added to these steels and their effect on the resulting physical properties would, in general, be the same as with the steels previously discussed. However, because of the higher chromium content of these steels, they are nearer to the outer boundary of the inner gamma loop and consequently they are more readily made two-phased by the addition of other ferritic formers, such as silicon, aluminum and molybdenum. For this reason if a single phased steel is desired, the silicon content seldom exceeds 1.0% and likewise, especially in the 9.0% chromium type steels, the molybdenum content should not exceed about 1.0%. On the other hand, if ferritic, or partially ferritic, steels are desired, this group affords a convenient basis from which to start.

The increased chromium content of this series of steels is primarily for the purpose of increasing the corrosion resistance, and especially in hot petroleum products, rather than the oxidation resistance. Improvements in this latter property can be obtained more economically through the addition of elements such as silicon or aluminum to the lower chromium steels. For example, on the basis of 1000-hour laboratory tests in air the oxidation resistance of each steel of this group is of the same order of magnitude and also nearly identical to that of the high silicon modification of 4-6 Cr.Mo.

The improvement obtained in corrosion resistance as the chromium content is increased above 4-6% may vary greatly, depending upon the type crude and the operating conditions. It is definitely known, however, that these higher chromium steels are rendering satisfactory service in applications in which the regular 4-6 Cr.Mo. steel was unsatisfactory. As indicated by *Fig.* 21, results from one refinery indicate that, under their particular conditions, the

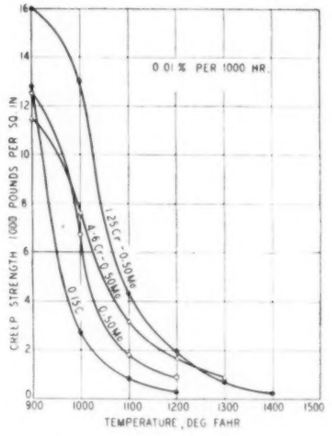


Fig. 21—Comparative corrosion resistance of 5.0, 7.0 and 9.0% chromium type steels

corrosion resistance of the 7% chromium steel is over 5 times that of the 4-6 chromium steel and that of the 9% chromium steel, about 6 times. These results also indicate the corrosion resistance of the 9.0% chromium type steels to be influenced to the greater degree by cold working, such as in expanding into tube return headers.

As in the case of the 4-6 Cr. type steels the corrosion resistance of this group of steels can be further enhanced by an increase in the silicon content, or by the addition of aluminum.

The increased chromium content of this group of steels is not for the purpose of increasing the prolonged high temperature strength. In fact on the basis of the stress required for a creep rate of 0.10% per 1000 hours the reverse may be true as shown in *Fig.* 22. In the presence of 0.50% molybdenum and about 1.0% silicon, the creep strength decreases progressively as the chromium content is increased from 5.0 to 7.0 to 9.0%. An increase in the molybdenum content to 1.0% is beneficial in these steels although even with this higher molybdenum content both the 7.0 and 9.0% chromium steels possess creep characteristics very similar to that of the 4-6 Cr. Mo. steel. In other words, the increased chromium content is detrimental insofar as the creep strength is concerned but its detrimental influence can be counterbalanced by an increase in the molybdenum content.

That deformation rate may be an important factor in the evaluation of the load carrying ability of these steels is apparent from the values of *Fig.* 23. When the 100,000 hour rupture strength is used as the basis of evaluation

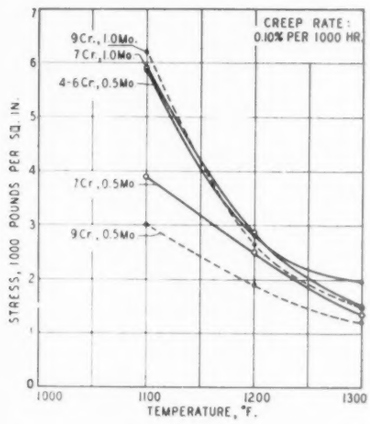


Fig. 22 — Creep strength of higher chromium steels with 1.0% silicon maximum

then the strength increases as the chromium content is raised to 7.0% and is further increased by an increase in the molybdenum content. A further increase in the chromium content to 9.0% causes the strength to be inferior to that of 4-6 Cr.Mo. steel at all temperatures except 1100° F. An increase in the molybdenum content of this latter steel to 1.0% results in a rupture strength superior or equal to that of the 7 Cr.-1.0 Mo. steel at 1100 and 1200° F. but at

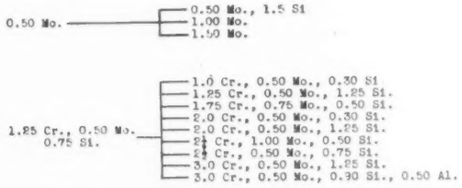


Fig. 23—Rupture strength characteristics of higher chromium steels with 1.0% silicon maximum

the higher temperatures the strength falls off at a more rapid rate.

From this it is apparent that too broad generalities cannot be drawn with respect to the load carrying ability of these higher chromium steels for their relative merits depend both on the rate of deformation used and the particular temperature considered. However, for oil cracking still tube applications it is believed that the higher rates of deformation, such as in the rupture test, should be used in the evaluation of the load carrying ability.

Again it must be realized that all of the stress values which have been considered were determined in air. Under more highly oxidizing conditions, or in the presence of severe corrosion, these higher alloy steels would show to greater advantage because of their increased surface stability.

Conclusions

In this discussion attempts have been made to first set forth the characteristics steels must possess for satisfactory high temperature service and to indicate how these required properties vary not only in different industries but in different applications within the same industry.

The more common alloying elements were then classified and it was shown that certain are suitable for increasing the high temperature surface stability characteristics and others for improving the strength. Certain also tend to produce a two-phased structure and, if this is not desired, the so-called ferrite and austenite formers must be balanced so that the resulting steel will be single phased.

The way in which these alloying elements have been used in the development of high temperature steels was then reviewed and it is hoped that, on the basis of this discussion, it has been shown that each element present serves a distinct and necessary function and that it has not been added simply for the purpose of making the alloys more complex or for increasing the number of steels available and thus complicating the picture for the designing engineer.

While the number of steels available for high temperature service may appear to be excessive, a distinct need still exists for steels capable of withstanding more severe conditions of temperature and stress and this is especially true for continuous service at temperatures of 1500° F. and higher and also for lower temperatures when the desired stresses are large and the permissible amount of deformation is very small. The next few years should see considerable developments in this particular field as certain technological processes, now in the laboratory stage, could be applied commercially if such alloys were available.

Abstracts from Current Literature

"REMOVAL OF DISSOLVED GASES FROM BOILER FEEDWATER"

By Arthur E. Kittredge, Cochrane Corp., Philadelphia. Company reprint, 18 pgs., 5 figs., of paper presented at Midwest Power Conference, Chicago, April 9, 1941.

Highly specialized and important phase of the layout and operation of the modern steam generating plant is that dealing with feedwater treatment, one of the major problems of which is the removal of dissolved gases. A comprehensive treatise of this problem is presented in which, after an exposition of the fundamental principles, there is discussed the two phases of gas removal, molecular diffusivity, tray efficiency, analysis of tests, removal of CO_2 and NH_3, and apparatus for removal.

"SOME INFORMATION ON CAUSES AND PREVENTIONS OF FIRES AND EXPLOSIONS IN THE PETROLEUM INDUSTRY"

U. S. Bureau of Mines Information Circular 7145.

A general discussion of the causes of fires from inflammable liquids in tanks, truck tanks, empty containers and the open atmosphere and best methods for extinguishing them. Explosions or fires from electrical causes are included, with recommendations for avoiding these causes.

"PETROLEUM AS A RAW MATERIAL"

An address by Prof. A. W. Nash, president of the Institute of Petroleum, at a meeting of the society in London, May 1, 1941, published in the Journal of the Institute of Petroleum, University of Birmingham, June, 1941.

An excellent review of the innumerable organic compounds that may be obtained either directly, or by synthesis, from crude petroleum. The properties of these compounds, methods of preparation and applications are covered under 6 divisions as follows:

1. Parafins. Their thermal decomposition with catalysis, reactions with steam, reactions with halogens and oxidation.

2. Unsaturated hydrocarbons, covering olefins, diolefins, and acetylenes under the headings; cracking, polymerization, hydration, esterification, halogenation, and oxidation.

3. Oxygenated aliphatics are separated into the alcohols, glycols, aldehydes, acids and esters.

4. Cyclic compounds are divided into the aromatics and cyclo paraffins available with the many reactions possible when they are utilized as starting material.

5. Sulfur compounds are divided into hydrogen sulfide, mercaptans and sulfonic acids.

6. Nitrogen compounds are covered under the naturally occurring naphthenic bases and the variety of compounds, such as nitrates and nitrites, that might be obtained by direct nitration of petroleum chemicals.

Method for Duplicating Road Octane On Multi-Cylinder Engines in "Lab"

● A method for duplicating road octane ratings in multi-cylinder engines in laboratories, developed by the Pure Oil Co., was described at the recent summer meeting of the Society of Automotive Engineers.*

The method uses the new "borderline" procedure for determining road octane values as correlated with engine speed, which new conception for expressing anti-knock characteristics of motor fuels was presented in the report on the 1940 road detonation tests of the Co-operative Fuel Research Committee.** A number of borderline knock curves were presented, showing how closely laboratory results duplicated actual road test data.

It is believed, the authors state, that the fact that a borderline reference fuel framework, with a good spread, has been obtained, and fuels have been properly evaluated in relation to this pattern, would justify the assumption that unknown fuels could be rated and expected to fall in their proper place on the reference fuel pattern.

It should be clearly understood, they state, that this type of laboratory correlation work does not replace, but should be looked upon as simply an adjunct to, road testing, useful in predicting fuel behavior on the road. Many laboratories are so located that climatic conditions prevent actual road testing for a good part of the year; but, since neither production of automobile engines nor blending of fuels can wait on long periods of inclement weather, it would be desirable if laboratories could at all times evaluate both cars and fuels by some device which would duplicate road test data.

Summarizing the CFR 1940 road test program, the paper by the Pure Oil Co. technologists stated: "This program successfully evaluated the anti-knock performance of motor fuels, in terms of standard reference fuels, while using several different road test procedures. The results obtained by this co-operative testing, both during and since the actual road testing, are highly significant and leave little doubt that actual road testing is the most satisfactory method by which the anti-knock characteristics of motor fuels, expressed in terms of standard reference fuels, can be obtained.

"This program has further shown that definite engine characteristics, such as higher compression ratios, etc., can be studied, and their effect, both singly and in combination, expressed in terms of standard reference fuels."

The apparatus used in the new Pure Oil Co. method

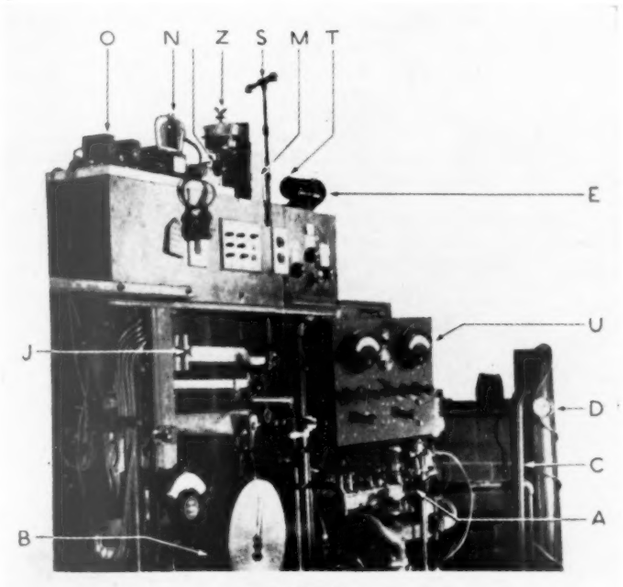


FIG. 1

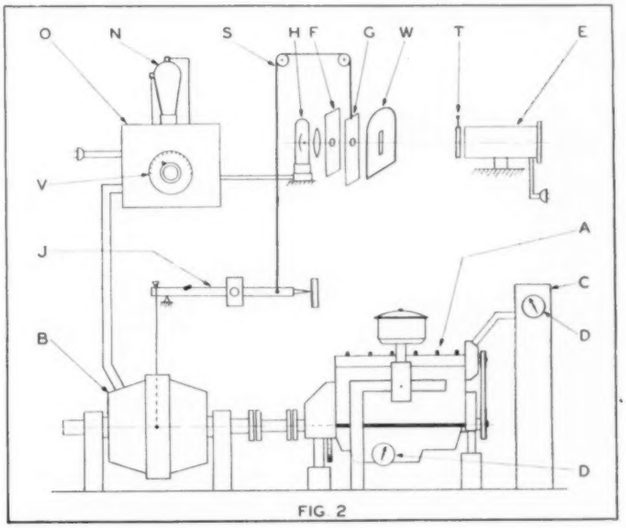


FIG. 2

Identification of Parts Shown on Figs. 1 and 2.

A. Engine (C-28 Shown)
B. 400 HP Dynamatic Dynamometer
C. Cooling Tower
D. Temperature Gauges
E. Light Source
F. Fixed Mask (Full Throttle set-up)
G. Sliding Mask (Full Throttle set-up)
H. CE-1 Cetron Photo-cell
J. Dynamometer Scale Beam
K. Rotating Mask (part throttle set-up)
L. Scanning Slit (1¼" x .080")
M. Photo-cell Housing
N. FG-95 Grid Controlled Rectifier (Thyratron)
O. Filter
P. Vacuum Throttle Control
Q. Three way vacuum valve
R. Adjusting Screws
S. Cord and Pulley linkage
T. Iris on Light Source
U. Control Panel (Tachometer & Spark Advance Indicator)
V. Sensitivity Control
W. Stray Light Shield
X. Cut out full throttle acceleration curve
Y. Transparent Discs
Z. Synchronous Motor (½ RPM output)

* "A Proposed Method for Duplicating Road Octane on the Multi-cylinder Engines in the Laboratory," by Joseph A. Moller, chief products engineer, Pure Oil Co., and H. L. Moir, F. C. Minor and R. R. Proctor, of the same company; presented by Mr. Moller at the Fuels and Lubricants Session, Summer Meeting, Society of Automotive Engineers, White Sulphur Springs, June 1-6, 1941.

**Refining Technology edition of National Petroleum News, June 11, 1941, pg. R-177.

of duplicating road test data consists of an oversized dynamometer, having a carefully, yet flexibly, controlled field excitation current, so that loading can be applied as desired. A dynamometer of sufficiently high capacity was chosen so that, first, it has a fairly high inertia effect of its own relative to the engine; and, secondly, such that extremely low field current values are needed to produce the necessary load. Thus, extremely small fluctuations in field current will produce relatively large torque characteristic changes. Hence, the eccentric mask relationship need be changed only minutely to effect necessary load changes.

Since the purpose was to duplicate road test data, engine data and performance on the road was first studied. As a starting point for full throttle borderline work, the data for the engine acceleration curve from 10 to 70 miles an hour was taken on a level road. The reference fuel framework and the 1941 API and CFR and other fuels were then run.

The next step was to plot these data, remove the engine from the car and load it on the dynamometer in such a manner that, in the laboratory, the acceleration curve under full throttle conditions duplicated the road acceleration curve under the same engine operating conditions. These same data could be taken for part throttle work, for increments of intake manifold vacuum.

Figs. 1 and 2 show the complete setup of equipment used in this work. The procedure was described as follows:

As a starting point, an overall road acceleration curve was required. With the distributor at factory recommended setting, acceleration curves were obtained by photographing side-by-side on one film a stop watch and an electric tachometer while the car was accelerated at wide open throttle from 10 to 70 MPH (corrected for speedometer error). Many runs were made on different roads, with and against the wind and under different weather conditions, and curves plotted from the simultaneous readings on the film. Thus an overall average curve was obtained. (Fig. 10)

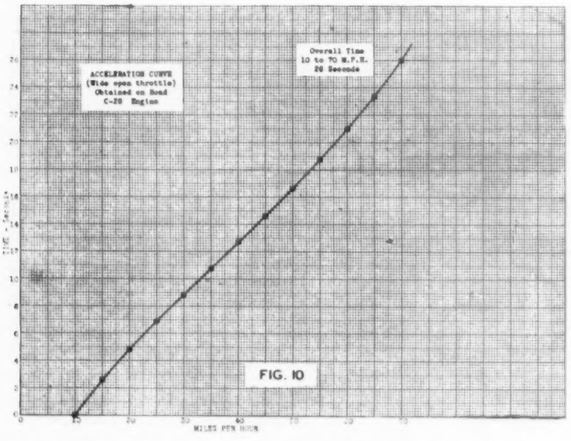


Fig. 10—Average overall acceleration curve, at wide open throttle, from 10 to 70 miles per hour, secured from actual road test data

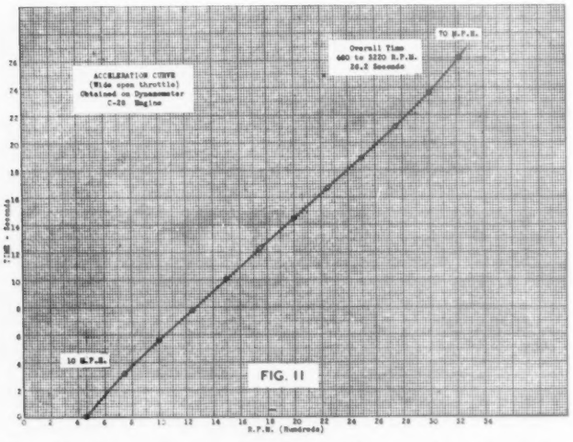


Fig. 11—Average overall full throttle acceleration curve, taken from dynamometer tests on the same engine, duplicating road conditions as to fuel, load, operators and test instruments

It was realized that many additional variables would be encountered in the duplication of this work on the dynamometer, but it was felt that if the same overall curve could be obtained by means of the control unit, the additional variables would be compensated for. The variables to be encountered in road testing were grouped as follows:

1. Barometric pressure.
2. Humidity.
3. Temperature.
4. Carbon deposits in engine.
5. Fuel.
6. Compression ratio.
7. Technique.

The probable additional variables to be encountered on the dynamometer stand were given as:

1. Relation between light flux and control voltage output of photo-cell.

2. Relation between control voltage input to grid and rectifier output current to field.

3. Shape of mask between light source and photo electric cell.

4. Speed of movement of masking device.

5. Torque curve of dynamometer.

The next move in the procedure was to remove the engine from the car on which acceleration curves and also borderline data on several fuels had been obtained, and place it on the dynamometer stand. With the same fuel as used on the road, the same stop watch, tachometer and camera, and the same operators, runs were made on the dynamometer. The load, light value, sensitivity control, control leverage and shape of aperture were adjusted and varied until the same average overall full throttle acceleration curve was obtained. (Fig. 11. Fig. 12 shows the two curves superimposed.) The work was then checked using other fuels and the acceleration curves then obtained on the dynamometer were found to check very closely with the road accelerations of the engine when these fuels were used, it was brought out.

"The sensitivity control varies the phase relationship between grid voltage and plate voltage and allows presetting of the minimum load occurring at 8 MPH at equi-

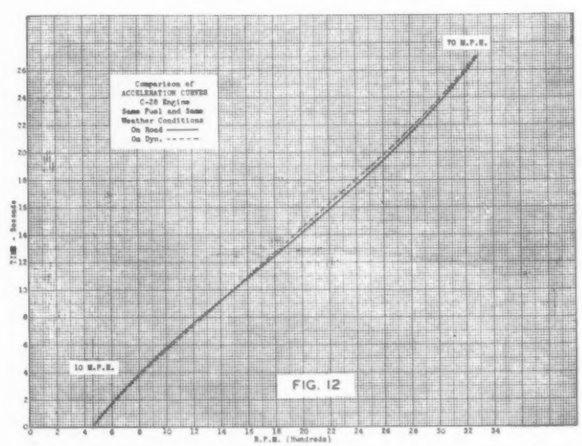


Fig. 12—Curves in Figs. 10 and 11 superimposed, the M.P.H. (corrected for speedometer error) in Fig. 10 being converted to R.P.M. for comparison

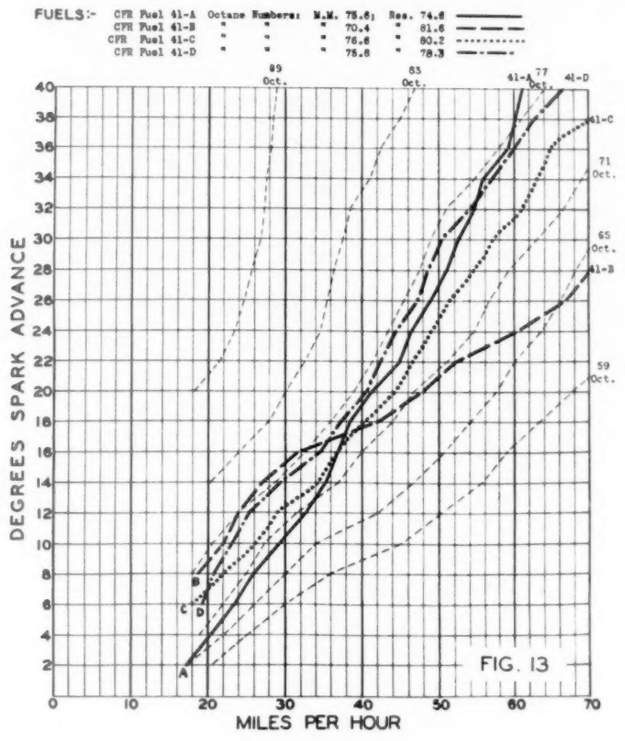


Fig. 13—Borderline knock curves, evaluating from road test data, four CFR fuels on a reference fuel framework

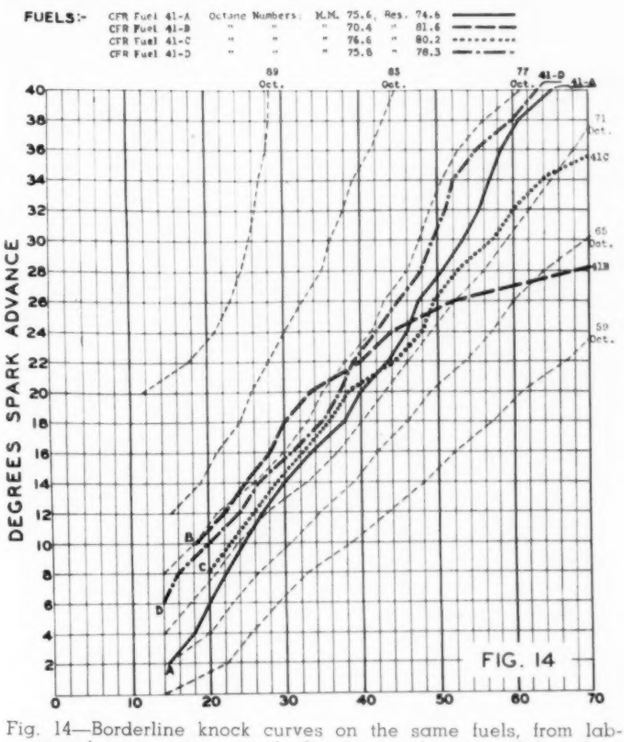


Fig. 14—Borderline knock curves on the same fuels, from laboratory dynamometer tests duplicating road test conditions from which data in Fig. 13 was taken. The two sets of curves illustrate the close correlation between road test and laboratory results

librium," the paper stated. "Under acceleration at wide open throttle, the load follows essentially the torque curve of the dynamometer until the beam arm starts to rise, at which time the sliding mask begins to cut off the light. It then maintains approximately the true engine torque curve by means of the compensating masks, which tend to hold the beam arm stationary, with the acceleration curve timing already fixed.

"The point at which the dynamometer torque curve merges into the engine torque curve may be adjusted by means of the pre-setting of the sensitivity control. It is felt that the slight difference between the road and dynamometer acceleration curves is probably due, at least in part if not entirely, to electrical or mechanical lag, or both.

"Since the 2 curves are almost identical within a maximum variation of 1.5%, the effect of all the additional variables would appear to be, in effect, cancelled."

In the test work, the borderline procedure was then used to rate the current API and CFR fuels, each run being made in 2 degree spark advance increments, and 2 or 3 accelerations made at each setting until an agreement of 50 RPM or less was obtained by 3 observers. Each start was made at 500 RPM below the point at which fadeout last occurred, and carried to at least 500 RPM beyond the fadeout point.

The results of these tests were compared with road ratings of the same fuels, as arrived at under the new CFR test procedure from data on the road performance made earlier. Figs. 3 and 4 show the similarity of the ratings.

"In plotting the curves, no effort was made to produce smooth curves," the paper states. "Rather, each one was drawn from point to point as determined in the runs, their natural smoothness showing further the possibilities of the method. It has been observed that the fadeout point is much easier to detect on the dynamometer than in a car, possibly owing to the lack of body, tire and other noises, and requires less time and fuel.

"Further, slightly better reference fuel spread has been noted, probably due to the better ability to detect fade-out points. Much other work has been done, involving part throttle, comparison of acceleration times, etc., between the different fuels using the same engine, as well as the same comparison between different engines of the same make, and of different makes, using the same fuels. This information will, it is hoped, eventually contribute to a better understanding of the fuel-engine relationship problems."

Applied Heat Transmission

Applied Heat Transmission, a new book intended to solve everyday heat transfer problems quickly and easily, has as its purpose to put into readily usable form some of the more important data on heat transmission and to describe some of the common types of heat transfer equipment and kinds of insulation used in industry.

The author, Herman J. Stoever, associate professor of mechanical engineering, Iowa State College, states that he placed emphasis on practical applications rather than on theory.

The first three chapters deal with equations required for the solution of elementary problems involving heat transfer by conduction, radiation, and convection.

The last two chapters are devoted to a description of some of the more common types of heat-transfer equipment and kinds of insulation used in industry. Equations for calculating the thickness of insulation required and their application is illustrated by solution of several typical problems.

The new 226-page book is available from NATIONAL PETROLEUM NEWS at $2.50.

Diesel-Electric Vs. Steam Power For Railroads

FACTORS involved in the use of Diesel-electric power in locomotives, as compared with coal or fuel oil burning steam locomotives, from a railroad operating man's point of view, were discussed, before the semi-annual meeting of the American Society of Mechanical Engineers, at Kansas City, by E. E. Chapman, Atchison, Topeka & Santa Fe railroad.

The author showed that the Diesel engine has many advantages, but some disadvantages, when compared with the steam engine for railroad use. For instance, the thermal efficiency of the Diesel is 27%, vs. 7% for steam. The water cost for the diesel is less than 10% of that of the steam locomotive, where water represents 10% of the total fuel cost. Mileage per year for the Diesel averages 250,000 miles, against 180,000 for steam. The Diesel is shown to have greater flexibility and speed, lower stresses to tracks, and dynamic braking.

Disadvantages quoted include the higher investment cost for the Diesel, $87.50 per horsepower, vs. $35 for steam and lower life expectancy, which is assumed to be 15 to 20 years for diesels, as against 28 years, actual experience for steam locomotives.

"It would be farfetched to intimate that Diesel locomotives will displace steam altogether in railroad service, but they are definitely a part of the picture," this author concludes. "As more and more of them are built, there undoubtedly should be a decrease in the unit cost. This will narrow the gap now existing in the relative initial investment of the Diesel versus the steam locomotive. At the same time, it is to be expected that competing steam locomotives will have considerably improved performance characteristics to match those of the diesel locomotive."

The portion of the paper, entitled "Steam vs. Diesel-Electric Power," which takes up in detail the advantages and disadvantages of diesel locomotives, is as follows:

"For comparative purposes the general dimensions and power performance characteristics of certain Diesel locomotives and comparable conventional steam locomotives are listed in table 1. Power performance data, i.e., drawbar horsepower on level tangent track, are shown graphically in Fig. 1.

"The 4000-hp. Diesel and the 4-6-4 type steam locomotive are essentially similar. However, it can be seen that at speeds below 29 m.p.h. and above 87 m.p.h., the 4000-hp. Diesel has more horsepower available at the drawbar than the 4-6-4 type steam locomotive. The lesser weight of the 4000-hp. Diesel locomotive is a distinct advantage also.

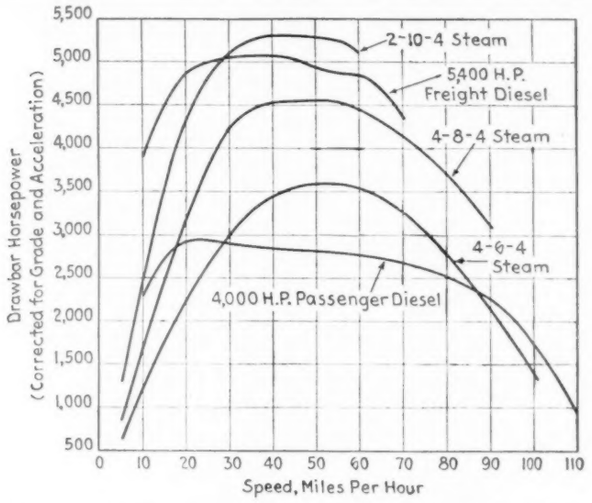
"The 5,400-hp. diesel locomotive is superior to the 4-8-4 type steam locomotive throughout its speed range. However, the 4-8-4 type steam locomotive is designed for a maximum speed of 90 m.p.h., while the 5,400-hp. Diesel locomotive is designed for freight service primarily with speed limited by motor restrictions and gear ratio to a maximum speed of 77 m.p.h. The 2-10-4 type steam locomotive develops more horsepower at the drawbar than the 5,400-hp. diesel locomotive at speeds above 29 m.p.h. However, the marked superiority in drawbar horsepower of the diesel locomotive at speeds under 29 m.p.h. gives it a distinct advantage not only in starting and accelerating heavy trains, but also in maintaining higher speeds on ruling grades.

Table I—Principal Dimensions and Characteristics—Diesel vs. Steam Locomotives

	Diesel		Steam		
	4,000 hp.	5,400 hp.	4-6-4	4-8-4	2-10-4
Length, over-all, ft.-in.	141–7½	193–0	102–6¾	112–1¼	113–6⅝
Total wheel base, ft.-in.	117–1	177–0	88.8	98–2½	100–3⅜
Rigid wheel base, ft.-in.	14–1	9–0	14–6	13–10	19–3
Weight, total, lb.	626,200	923,600	808,626	895,846	934,766
Weight on drivers, lb.	426,800	923,600	213,440	286,890	371,990
Wheels, number and diameter, in.:					
Engine truck	8–36	.....	4–37	4–37	4–37
Drivers	16–36	32–40	6–84	8–80	10–74
Trailer truck	.....	.....	4–40	4–40	4–40
Tender	.....	.....	12–37	12–37	12–37
Fuel oil capacity, gal.	2,400	4,800	7,000	7,000	7,000
Boiler, water capacity, gal.	2,900	.....	21,000	21,000	21,000
Cooling, water capacity, gal.	600	900	.....	.....	.....
Lubricating-oil capacity, gal.	520	700	.....	.....	.....
Starting tractive force, lb.	106,700	220,000	49,300	66,000	93,000
Factor of adhesion	4.00	4.20	4.33	4.35	4.00
Drawbar horsepower at m.p.h.:					
10	2,270	3,870	1,210	1,670	2,430
20	2,930	4,850	2,240	3,170	4,340
30	2,910	5,040	2,990	4,230	5,100
40	2,840	5,070	3,450	4,530	5,310
50	2,810	4,930	3,600	4,550	5,280
60	2,760	4,720	3,550	4,450	5,120
70	2,680	4,400	3,270	4,160	.....
80	2,510	.....	2,790	3,720	.....
90	2,260	.....	2,160	3,120	.....
100	1,750	.....	1,400	.....	.....
110	950	.....	.....	.....	.....

"It should be noted, however, that motor limitations restrict the loading of the diesel freight locomotive on any grade to what it will handle at a minimum speed of 16 m.p.h. and for a diesel passenger locomotive to what it will handle at 35 m.p.h. at which respective speeds motors can be operated at continuous rated output.

"The advantages claimed for diesel locomotives over the conventional steam locomotives are high thermal effi-



(Available drawbar horsepower on level tangent track, 4000- and 5400-hp. Diesel locomotives and 4-6-4, 4-8-4, and 2-10-4 steam locomotives)

Fig. 1—Power Performance of Diesel and Steam Locomotives

ciency; lower water costs; high utilization—greater flexibility; reduction of delay due to taking fuel and water; higher sustained speeds; lower stresses imparted to track structure and dynamic braking.

"The disadvantages are, high initial investment; lower life expectancy; demand for higher degree of maintenance; higher unit cost of fuel, and higher cost of lubrication.

Thermal Efficiency

"A comparison of over-all thermal efficiency—ratio of power output at drawbar to heat content in fuel—shows the diesel locomotive to have an average thermal efficiency of 26 to 28%, while comparable modern steam locomotives have a corresponding thermal efficiency of 6 to 8%. Because of this, there is a twofold advantage for the diesel locomotive in that there is a reduction in the amount of fuel necessary to carry and an increase in the length of operation between refueling.

"On steam locomotives lower water cost is an item of some importance. The average water cost for a steam locomotive is approximately ten % of the fuel cost. On Diesel locomotives, water is a relatively small item even on passenger Diesels where steam generators are used to furnish steam for heating or for air-conditioning passenger trains. The amount of water required for this purpose is only about one-tenth of the total water used for all purposes by a steam locomotive in the same service, so that for passenger Diesel locomotives water costs will be not over one-tenth that for steam locomotives. For freight Diesel locomotives water costs are practically negligible.

Utilization and Flexibility

"Utilization may be measured in two ways. For passenger and freight locomotives, the mileage per locomotive per year indicates directly the relative utilization. For passenger Diesel locomotives, the average mileage per year is 250,000 with a maximum monthly mileage of 27,000, as compared with 180,000 miles per year and a high monthly mileage of 18,000 to 19,000 for modern steam passenger locomotives. At the present time Diesel passenger locomotives are largely assigned to definite runs, for which their availability has proved to be 95 to 99 per cent. In switching service, utilization is usually measured by hours of service performed out of total monthly hours. In this service generally Diesel switching locomotives have a very high utilization factor.

"The Diesel locomotive has a greater flexibility in that the locomotive may be accommodated to the train to be handled. On long runs over varying grades, one or more engines may be cut out entirely on lighter grades, where not necessary and cut in for work in mountainous territory."

Other advantages of Diesel locomotives were summed up in the article as follows:

Reduction in delay time caused by taking on fuel and water.

Ability to run long distances between fuel and water stations, as compared with steam locomotives.

The reduction in delay time, in stopping and starting for taking fuel and water, permits of higher sustained speeds without the necessity for running at high maximum speeds.

The rapid acceleration of the Diesel locomotive at low speeds is a distinct advantage in freight service, in that less time is required to accelerate to speeds of 16 m.p.h. or above, where the continuous rating of the locomotive is utilized.

Diesel locomotives, which have no unbalanced weights in their wheels, remove the danger of kinking rails and thus lessen the stress imparted to the track. However, with such locomotives able to travel at speeds up to 120 m.p.h. in passenger service, it is pointed out that wheel diameters and wheel loads must be so proportioned that shearing stresses in the head of the rail, and particularly in the potential shatter crack zone, be kept within prescribed limits.

Development of the Diesel locomotive has reintroduced a method of controlling speed of freight trains on long descending grades, by dynamic braking, the utilization of the power in the locomotive to hold the train by reversing the direction of the field current, similar to regenerative braking on electric locomotives.

In comparing Diesel and steam locomotives as to initial investment, operating life, and fuel and lubrication costs, the paper stated:

"In any discussion of disadvantages of the Diesel locomotive, the question of cost of initial investment is an important consideration in comparing Diesel against steam locomotives. Recent improvements in production methods and increasing numbers in production have gradually lowered the cost per horsepower of Diesel locomotives to approximately $87.50, while for steam locomotives of comparable horsepower costs are approximately $35 per horsepower. The higher initial cost is partly offset by the greater utilization of the Diesel locomotive, which helps to keep down the overhead cost per mile of operation.

"With no background other than experience in the automotive industry, the life expectancy of the Diesel engine has been estimated at a relatively lower figure than for steam locomotives. Depreciation rates are based on an assumed expectation of 15 years of service for road Diesel locomotives, and 20 years for switching Diesel locomotives, against an accepted figure of approximately 28 years for steam locomotives. Experience gained from the continued use of Diesel locomotives in all kinds of service may justify an upward revision of the life expectancy at some future time. Meanwhile the low assumed figure is a definite handicap because of the resulting increased overhead charge.

"The close tolerances on numerous parts together with the complications owing to interlocking of electrical and mechanical equipment call for a higher degree of maintenance of the Diesel locomotive. On the other hand, refinements in steam locomotives such as roller bearings, improved counterbalancing for higher speeds, and additional auxiliary equipment that requires close maintenance for efficient operation add to the amount of necessary maintenance on this type of motive power. The use of road maintainers on Diesel locomotives is in question; some railroads operating diesel locomotives consider such maintainers as an unnecessary expense. There is a direct additional operating charge where road maintainers are used, but this has been justified.

"The use of maintainers on Diesel locomotives has helped to keep maintenance costs to a minimum in that

prompt attention when necessary has forestalled costly breakdowns on the road and has provided an intimate knowledge of work requiring immediate attention at terminals. The actual comparative maintenance costs of the two types of motive power are nearly equal considering that no cost records are available for general shopping of Diesel locomotives and there is a question of necessity of general shoppings for Diesel locomotives.

"The lack of specially trained men and necessary equipment has been a handicap as far as keeping down cost of maintenance on the Diesel locomotive, but this handicap is rapidly being eliminated.

Higher Unit Cost of Fuel

"The lower fuel consumption of the Diesel locomotive is somewhat offset by a higher unit cost of fuel, but in spite of the higher unit cost, the net cost of fuel consumed per unit of power developed is approximately one half to two thirds that of unit fuel costs of comparable steam locomotives. In localities where unlimited quantities of good quality steam-locomotive coal are available at low cost and with little transportation requirements, the foregoing comparison might not hold good. Similarly, those railroads that are close to oil fields and refineries that can offer large quantities of residuum fuel oil at low cost cannot always justify use of the higher priced Diesel fuel oil. Conversely, in some localities where there is a scarcity of fuel, the saving in transportation charges because of the much smaller quantity required will justify the use of the Diesel locomotive because of fuel saving.

"The operation of Diesel locomotives requires that fuel-oil specifications be held within a close range, which accounts in part for the higher unit cost of fuel. In the adoption of Diesel motive power exclusively, it must be remembered that other fuels are eliminated from competition. This is not the case with the steam locomotive, since with this prime mover the competitive condition existing between coal and fuel oil tends to keep unit costs at a reasonably low level. Any abrupt change in the price of either fuel immediately justifies a change by adapting the steam locomotive to burn the lower-priced fuel.

Higher Cost of Lubrication

"The over-all cost of lubrication is definitely in favor of the steam locomotive. The quantity of lubricating oil required, as well as higher price, makes the net cost approximately double for the Diesel locomotive as compared with the steam locomotive. With either type of power, the lubricating cost is a relatively small percentage of the total cost of operation.

Accomplishments of Diesel Locomotives

"A resume of what has been accomplished by Diesel-locomotive operation in main-line service is as follows:

"1—The schedule time for passenger service between important terminals has been reduced. There has been a steadily increasing number of higher-speed passenger trains placed in service by various railroads, all of which have proved to be popular with the traveling public. Incidentally, some railroads which inaugurated higher-speed service utilizing steam motive power initially have since changed to diesel power for this fast service.

"2—In freight service, it has been possible to increase both the tonnage hauled and the average speed between terminals. The power performance particularly in lower speed range has made it possible to operate trains over most ruling grades without need for helpers or for double heading.

"3—In bad weather with adverse rail conditions, the Diesel locomotive, because of uniform torque on driving wheels and distribution of available tractive force over a greater number of driving wheels, has demonstrated its ability to maintain schedules without reduction in weight of train handled.

"4—The diesel locomotive has shown the possibility of long locomotive runs, with very little service required at intermediate division points. It has directed attention to the fact that the only economical operation is obtained from motive power that is moving. Indirectly, attention has been focused on terminal delays to freight trains and the need for improvement in getting trains through divisional terminals.

"5—It has stimulated the energies of the steam-locomotive designers to develop steam motive power with performance characteristics to compete with those of the Diesel locomotive. At the present time there is a need for an all-purpose Diesel locomotive that can be utilized in either freight or passenger service, and which will fit with steam-locomotive helpers where such helper service is required."

Principles, Applications Of Thermodynamics

A textbook work is "Thermochemical Calculations", by Ralph R. Wenner. It is divided into 2 parts, principles and applications, and covers 384 pages, including an appendix with 6 tables and 60 unsolved problems. There is an author and subject index.

Of interest to research chemical engineers studying petroleum refining processes where equilibriums seldom exist is the inclusion of much material concerned with "production" systems, such as fluid flow, absorption, liquefaction, reaction chambers ("converters"), vaporization, etc., where enthalpy changes and localized equilibrium are always involved. It is perhaps unfortunate from the engineer's viewpoint that the title "Thermochemical Calculations" was used rather than "Applied Thermodynamics", since much of the material involves only physical changes.

This latest addition to the voluminous literature covering the principles and applications of thermodynamics should be of value to the petroleum technologist who is grounded in physical chemistry and the laws of thermodynamics, since it specializes according to the author in "methods for applying thermodynamic principles to practical laboratory and technological problems." It will be helpful to engineers responsible for the design and operation of refining processes.

This book is available from NATIONAL PETROLEUM NEWS at $4 a copy.

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